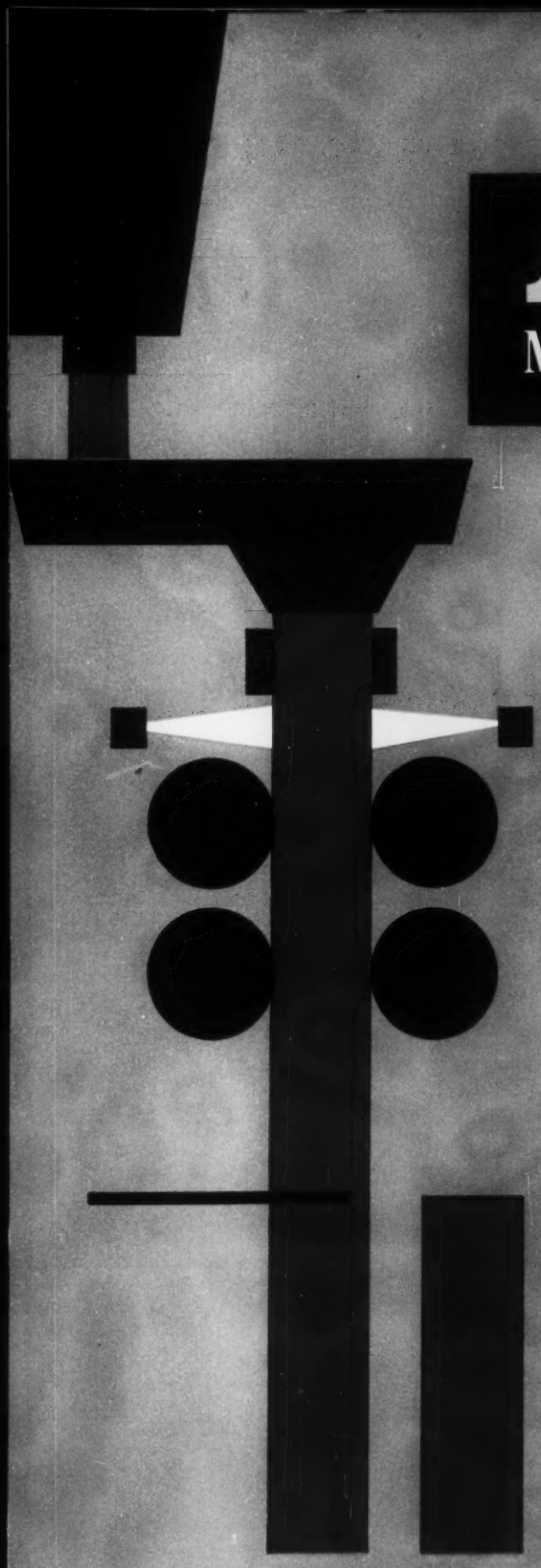
MARCH 25, 1957

STEEL

The Metalworking Weekly

A PENTON PUBLICATION

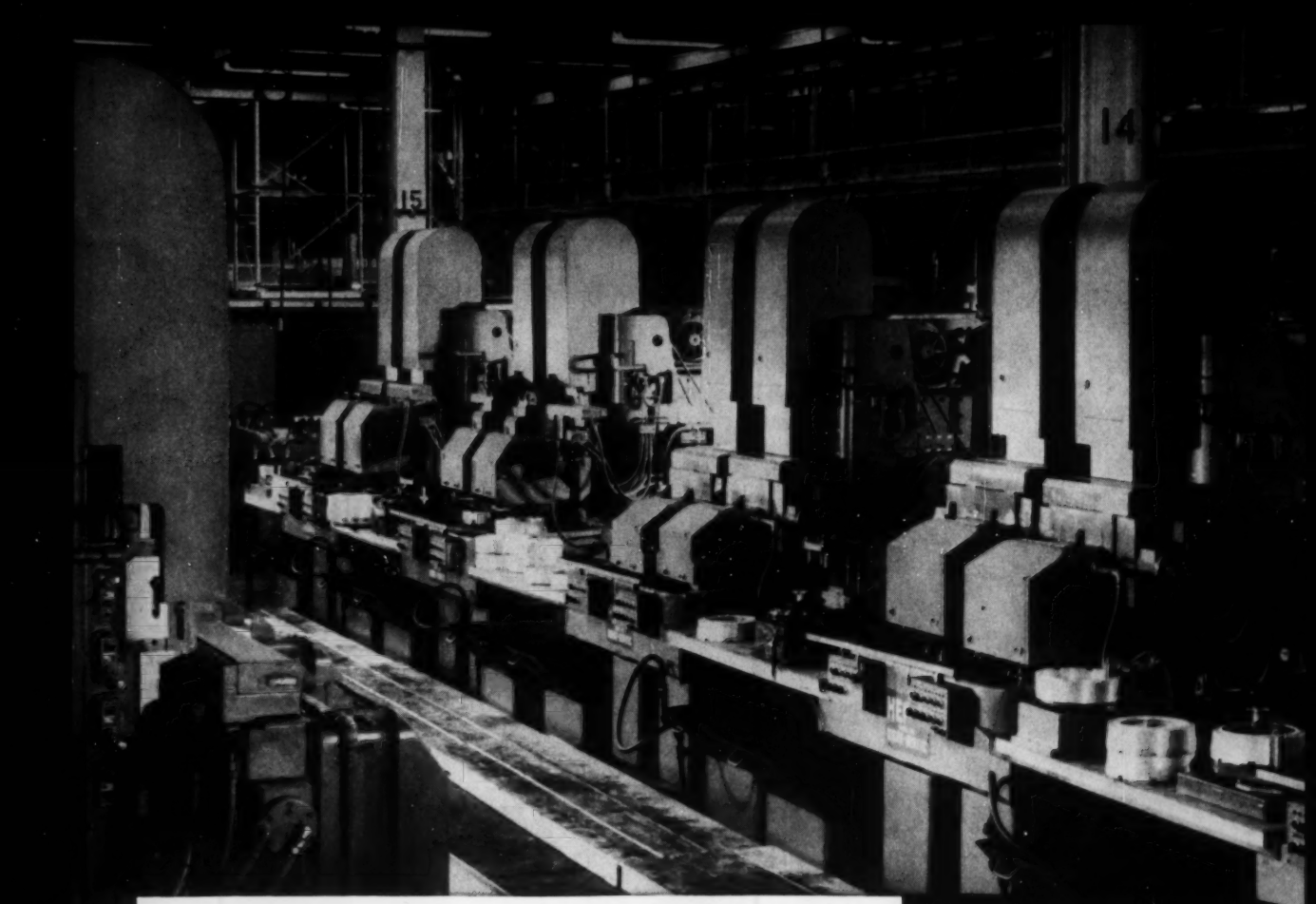


CONTINUOUS CASTING:
Ready for Carbon Steel
—page 108

✔ Inflation-Proofing Your Pension Plan
—page 68

✔ Look for Steel To Go Up Another $5 to $6
—page 147

CONTENTS — PAGE 5



Here's how

VERTICAL Bore-Matics

can save time and money on many precision-finishing jobs

LESS FLOOR SPACE These compact Vertical Bore-Matics save precious floor space, make use of more available up and down areas, permit operator to handle more than one machine.

EASIER LOADING Parts located down and onto the fixture, not up and into the workholding device. All stations are *front* stations — less reach and stretch.

IMPROVED CHIP AND COOLANT CONTROL Vertical units lend themselves naturally to gravity control of chips and coolant by means of simple, effective guarding.

CONTINUOUS PRODUCTION Independent operation of each station provides maximum opportunity to keep stations cycling continuously except for loading and unloading time.

THESE are just a few of the reasons why many types of work can be handled more efficiently and economically on a Heald Vertical Bore-Matic than on any other type of precision-finishing machine. For further details, send for Bulletin 2-352-1, Issue 1.

Ten Model 352 VERTICAL BORE-MATICS precision finish 5 different automatic transmission parts

Shown above is an installation of Heald Vertical Bore-Matics in a large automotive manufacturing plant. These space-saving machines are used for high-production Borizing of the following automatic transmission parts:

- **Disc and Hub Assemblies**
- **First Turbine Convertors**
- **Convertor Pump Housings**
- **Turbine and Shaft Assemblies**
- **Second Turbine Convertors**

Versatility of cycling and ease of tool changing makes these units readily adaptable to future job changeovers.

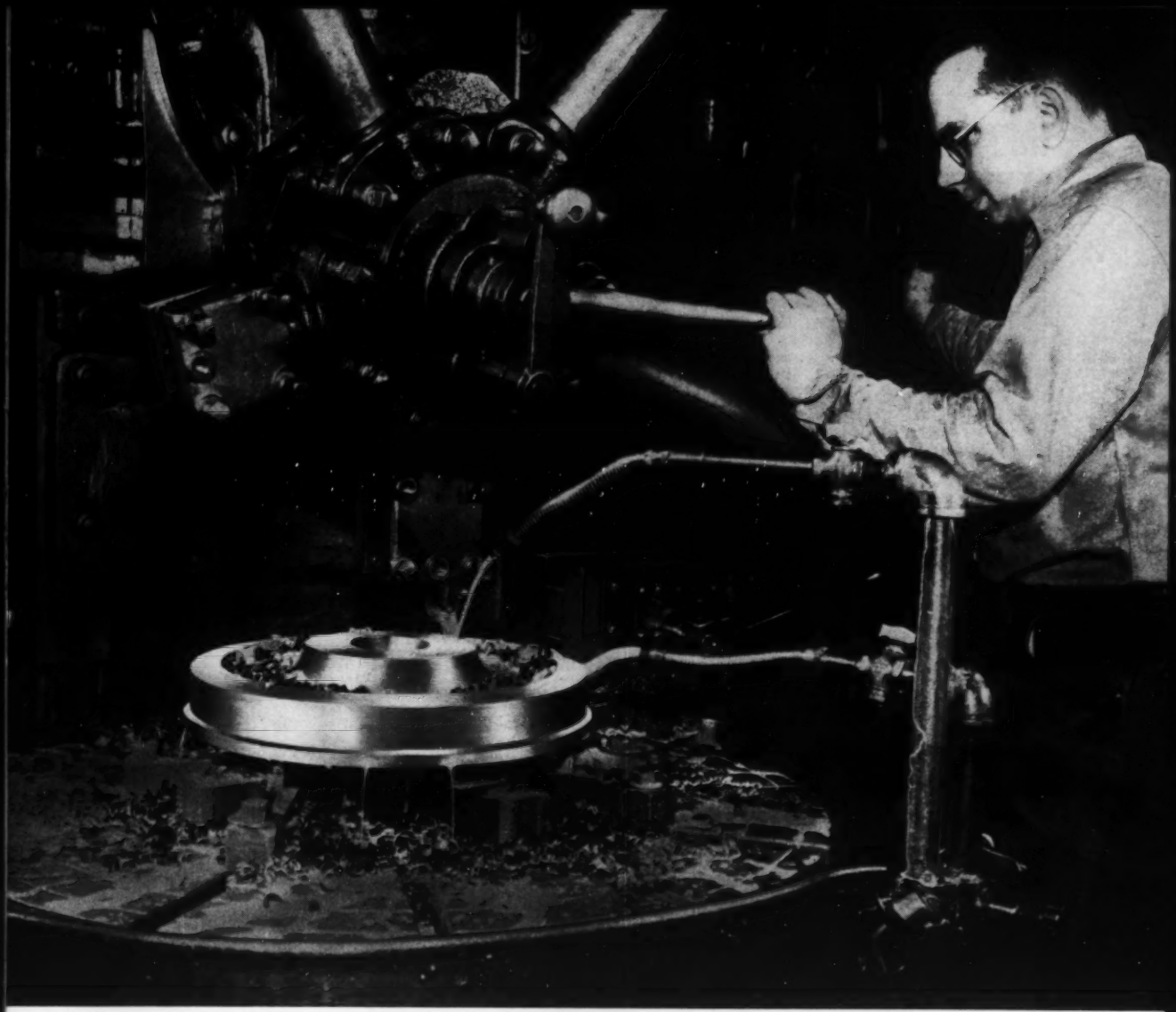
IT PAYS TO COME TO HEALD

HEALD

THE HEALD MACHINE COMPANY Worcester 6, Massachusetts

Subsidiary of The Cincinnati Milling Machine Co.

Chicago • Cleveland • Dayton • Detroit • Indianapolis • New York



Another Good Gear on the Way

Here's a piece of work that is destined to become a transmission gear. The machinist has found it easy going because of the highly dependable blank he's using. Right from the start, he has had smooth sailing.

The blank was made by Bethlehem's forging-and-rolling process, a method of manufacture that is unique. By combining both forging and rolling in a single operation, this process imparts uniform density and smooth, regular grain flow. As a result, the metal cuts away cleanly and fast, and there is no hidden trouble to plague the machinist.

This is important. But even more important is *strength*. In Bethlehem blanks, there's strength in abundance—the strength and soundness essential for gears, crane wheels, sheaves, flywheels, and other circular products.

These sturdy steel blanks can be furnished in sizes to 46 in. OD, so there's a wide range of choice. There's also available an excellent variety of sections.

For full details, we suggest you call our nearest sales office—or write for Booklet 216, which contains more than 80 photographs and a wealth of helpful information.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

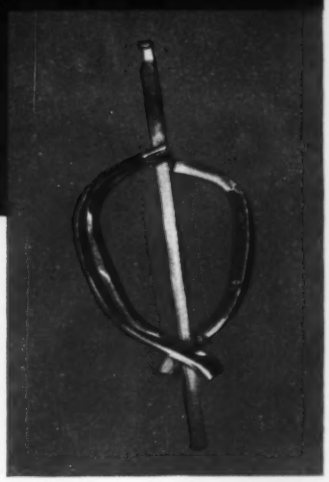
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation.
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

WAGNER ISO-BRITE COPPER . . .

"The efficiency of your new Iso-Brite Copper bath will enable us to put a $7500 'semi' to work on other jobs. We get a deposit of .0005" in a 15 minute cycle and could easily get .0006" to .0008" if required. Iso-Brite needs less maintenance than any bath within our experience." (Robert Hilfinger, Pres. Hilfinger Corp. to Jos. R. Wagner.)



Die cast automotive grill part ready for nickel and chrome.

doubles

SEMI-AUTOMATIC PLATING!

CONVERSION TO ISO-BRITE ELIMINATES ONE MACHINE . . .

The record at Hilfinger Corp., Toledo, Ohio, tells a simple story. This big, 115,000 sq. ft. die casting plant with a 200-man plating department originally required two semi-automatic plating machines for plating copper before nickel and chrome on large automotive die castings. New Wagner Iso-Brite Copper bath was installed eight months ago in one tank, replacing a leading proprietary copper bath, both machines being operated by a single generator. Excessive burning of the competitive plate resulted. The single machine charged with Wagner Iso-Brite Copper now turns out Hilfinger's entire production requirement to the customer's specification, permitting the surplus semi-automatic to be devoted to other production.

If reducing finishing costs is of interest to you, consider these reasons why this new Wagner-processed chemical is making records everywhere:

Wagner Iso-Brite Copper offers

1. Ease of control
2. High anode efficiency—copper cyanide additions virtually eliminated
3. Much heavier plate
4. Fine grained, dense, ductile, fully bright
5. Freedom from roughness
6. Wide operating range—temperature 135-165°; up to 60 amperes per square foot
7. High tolerance of organic contamination

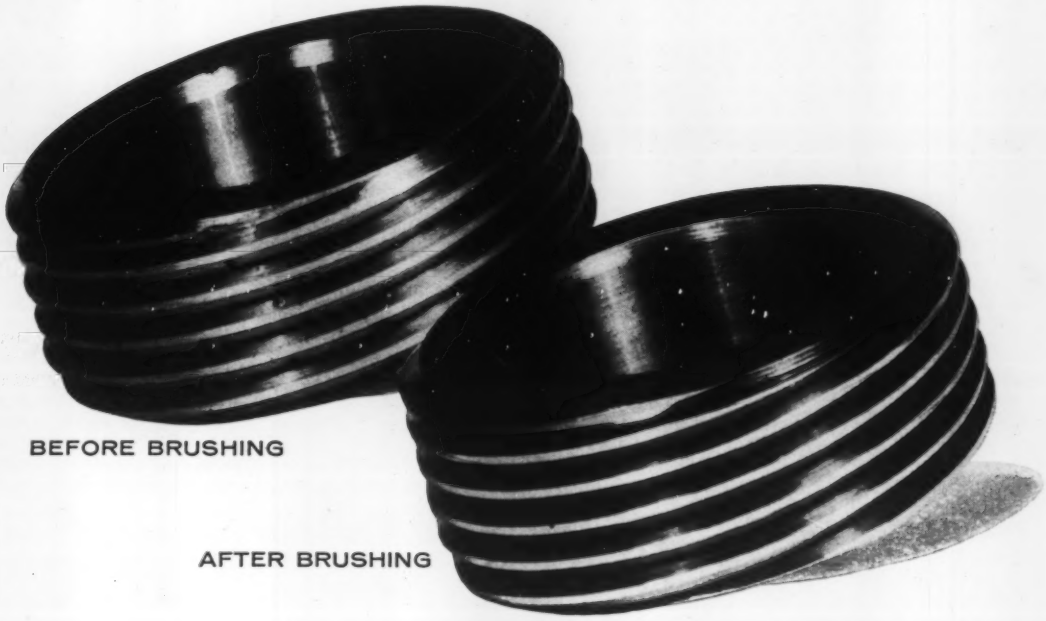
Wire, phone or write for Bulletin 70.2 for full technical information on Iso-Brite Copper and the Wagner cadmium and zinc brighteners and chromate finishes. Please pass this advertisement along to your purchasing agent or plating superintendent. The Wagner man in your area will assist you with any plating problem.

400 MIDLAND AVE., DETROIT 3, MICHIGAN

CHICAGO • CINCINNATI • CLEVELAND • INDIANAPOLIS • NEW YORK • ROCHESTER • GRAND RAPIDS

Wagner BROTHERS INC.

OSBORN® BRUSHING METHODS *worthy of your confidence*



Worm turns for faster finish

REMOVING fine feather burrs and blending surface junctures on steel worms is an exacting operation. Hand methods are slow and costly . . . quality irregular.

Today, using Osborn Brushamatic® Methods, vastly improved results are achieved quickly and economically. The operator merely loads and removes the part from the machine. No special skill is required. Absolute uniformity, piece after piece, assures uninterrupted assembly, eliminates scrap loss.

Results that can be obtained by Osborn Power Brushing methods are virtually unlimited. Without obligation, an **O**sborn **B**rushing **A**nalyst will survey your manufacturing needs. Write *The Osborn Manufacturing Company, Dept. G-53, 5401 Hamilton Avenue, Cleveland 14, Ohio.*

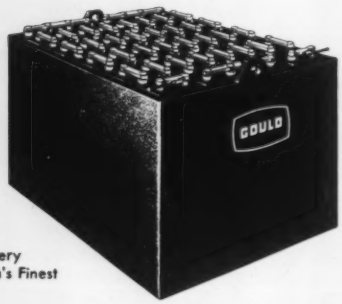
Osborn Brushamatic 3A.

Send TODAY for the new 20-page Brushamatic Booklet.

Osborn Brushes

BRUSHING METHODS • POWER, PAINT AND MAINTENANCE BRUSHES
BRUSHING MACHINES • FOUNDRY MOLDING MACHINES

PLAY SAFE... buy the battery that gives you "extra runs" every year.



Gould
Industrial
Truck Battery
—America's Finest

Gould application engineers provide you with a continuing service that helps you keep batteries running longer. Try us and see.

Gould-National Batteries, Inc., Trenton 7, N. J.

More Power to you from Gould

gould BATTERIES

©1957 Gould-National Batteries, Inc.

Always Use Gould-National Automobile & Truck Batteries

IN THIS ISSUE

STEEL
The Metalworking Weekly

March 25, 1957
Vol. 140 No. 12

METALWORKING OUTLOOK

51 **Business jitters fade away** as steady, if not spectacular, economic prospects appear likely for rest of year

☑ 57 **ODM shifts its thinking** on industrial mobilization

58 **Score on nuclear power expansion:** 227 million kw capacity by 1980

59 **Closed circuit TV expands**—Most makers feel sales will double this year

60 **Nonferrous scrap** dealers pessimistic

61 **Use your trade association**—Small business can reap benefits

61 **UAW hits snag** in attempt to hook Honeywell union

62 **Used machine tool outlook good**—Order book action needed

63 **U.S. Steel cites tax pains,** inadequate depreciation credits

67 **Planned production pays**—How Pittsburgh Steel solved a knotty problem

☑ 68 **Pension plan nips inflation**—Formula based on cost-of-living index used to adjust benefits. It's adaptable to metalworking plans

85 **Ohio firm starts vacuum melting** titanium, steel and alloys

TECHNICAL OUTLOOK

99 **Nuclear power plant designers are expected to switch** to clad steel for heavy wall piping as the result of studies by Lukens. It's cheaper

100 **Atomic power plant valve and pipe fitting requirements are rigid.** It means manufacturing methods must be precise, inspection tighter

☑ 102 **New 16-15-6 alloy fills a need**—It contains 40 per cent less nickel, yet performs as well as 16-25-6

106 **Lube system uses circulating oil**—It's centralized, polices itself

COVER ARTICLE

108 **Progress in Steelmaking**—Continuous casting comes to carbon steel

117 **Lathes for axle shafts are automated**—Sequence shown in flow chart

124 **Aircraft tools turned out by printing press firm**—A diversification study

MARKET OUTLOOK

145 **Prices: An incentive to buy steel**—Indexes and composites, 155; steel prices, 157; ores, 163; ferroalloys, 164; scrap trends, 167, prices, 168

☑ 147 **Steel expected to rise $5 to $6 a ton** at midyear as result of wage hike guaranteed under three-year labor contract

170 **Nonferrous metals**—Stockpiling: Rough road ahead—Prices, 172

REGULAR FEATURES

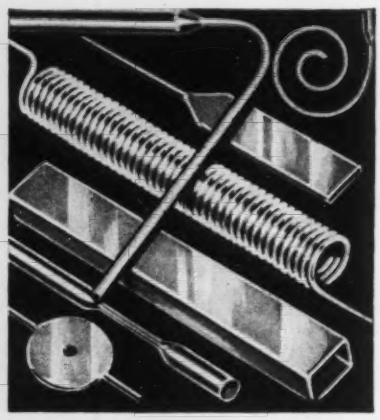
6 Behind the Scenes
10 Letters to the Editors
16 Staff
23 Calendar of Meetings
55 The Editor's Views
64 Windows of Washington
71 Mirrors of Motordom
75 The Business Trend
79 Men of Industry
82 Obituaries
121 Machine Topics
127 New Products
142 New Literature
175 Advertising Index

Published every Monday by The Penton Publishing Co., Penton Bldg., Cleveland 13, O. Subscriptions in the U.S. and possessions and Canada, $10 a year; all other countries, $20. Current issues, 50 cents each. Metalworking Yearbook issue, $2. Accepted as controlled circulation publication at Cleveland. Copyright, 1957, The Penton Publishing Co.

Index available semi-annually. Steel is also indexed by Engineering Index, 29 W. 39th St., New York 18, N. Y.

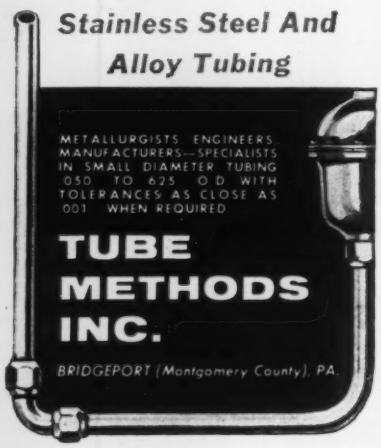
TMI TUBING

HAS THE EXPERIENCE THAT KNOWS HOW TO MEET *PERFECTION* SPECIFICATIONS



You might term those perfection specifications "problem children" . . . we take them right in stride for that's the kind of cold-drawing that won us our reputation. Even if you require split-hair tolerances I.D. and O.D. . . . or need shaping that seems impossible, our engineers and production craftsmen have the unique ability to make your job relatively easy. From the heart of atomic energy to the most sensitive instrumentation application, TMI tubing is proving its quality every day.

See For Yourself...You Can Depend On This Symbol For The Best In Small Diameter Stainless Steel And Alloy Tubing


METALLURGISTS, ENGINEERS, MANUFACTURERS—SPECIALISTS IN SMALL DIAMETER TUBING .050 TO .625 O.D. WITH TOLERANCES AS CLOSE AS .001 WHEN REQUIRED
TUBE METHODS INC.
BRIDGEPORT (Montgomery County), PA.

behind the scenes

Way Down Yonder

A group named AIME (which means "I like" in French, and "Alas!" in Italian, and "The American Institute of Mining, Metallurgical & Petroleum Engineers" in English) converged on New Orleans a while ago to consider items of pertinent industrial interest. A certain amount of extracurricular interest was diverted toward Bourbon street and the Vieux Carre, but it is not unusual for adult males to allow their attention to be engaged by the trivia purveyed in those districts—things like dancing, and jazz, and alcohol, and scanty (oops!) scantily clad ladies. H. VanYorx Caldwell, STEEL's steel plant editor, who attended in the earnest hope of learning something new and fascinating about developments in continuous casting of carbon steel, informed us that most of the fellows shunned hollow frivolities in favor of some dandy technical sessions.

When we tried to pump Van about well remembered honky tonks and seamy joints featuring bang-bang piano players, his eyes flashed and his chest heaved. "You should have heard Michael Tenenbaum!" he exclaimed.

"Where does he play?"

"He doesn't play. He read a wonderful paper on 'Continuous Casting of Three Types of Low Carbon Steel,' which he prepared with the help of F. G. Jaicks and L. E. Kraay of Inland Steel Co. Continuous casting, you know . . ." (we didn't know, but, by George, we are going to dig right into the subject, and this is an excellent time to tell you that STEEL's timely report on it appears on page 108. Yes, we realize that we left Van dangling at the end of a sentence, but you can pick him up again when you turn to the cover story.)

Chimps Stir Mutiny

The happiest news story we saw this month was the one about the chimpanzee artist. Like Sir Winston Churchill and Dwight David Eisenhower, this amateur paints simply for the fun of it, but recently his canvases have sold for as much as $50 apiece, which is even funnier. When this information trickled back to STEEL's art department, it stirred up mutinous mumblings that echoed harshly among the paste pots. A committee, composed of Terrible Tommy Welsh, Ace Bouhall, Tiger Farnsworth and Flash Bryan, approached Art Director Bill Kellogg. "We're just as good as chimpanzees," they declared. "Why ain't we in the same salary bracket?"

As we go to press, there is a rumor that Kellogg, wearying of artistic temperament, is toying with the idea of firing his entire staff and replacing it with chimpanzees.

Revised Calendar

SUN	SUN	SAT	THU	WED	TUE	MON
7	6	5	4	3	2	1
14	13	12	11	10	9	8
20	19	18	17	16	15	1
½	26	25	24	23	22	21

Here's a copy of an advertising man's calendar. We picked it up from a mailing piece sent out by the Cleveland Letter Service Co., Cleveland. The letter service people said it was old and frayed, and if we wished to use it, we were welcome. The revised calendar carried this copy: 1. Every assignment is wanted yesterday. With this calendar, a job can be started on the 7th and completed on the 1st. 2. Since most deadlines are set for the 1st of the month, there are two, giving twice the possibility of being on time. 3. There is no Friday because this day is wholly wasted on meetings anyway. 4. A one-half day is provided for the calls of printers, space peddlers and agency reps. 5. There are only 26 days, so there won't be so much month left over at the end of the budget. 6. Every week has two Sundays, since this is the only time an ad man can get anything done.

Shrdlu

(Metalworking Outlook—Page 51)

B.F.Goodrich report:

Men used to be in danger—giving steel an acid bath

A typical example of B.F.Goodrich improvement in rubber

THE job of cleaning rust off of long strips of steel used to be slow, costly and plenty dangerous because nothing could hold the hot acid. All kinds of tanks were tried—wood, concrete, steel. Yet acid leaked onto the floor constantly—a waste, a hazard to workmen.

A satisfactory tank seemed impossible until B.F.Goodrich engineers came up with something entirely new in the way of a protective rubber lining. They worked out a combination lining of hard rubber sandwiched between soft rubber, called Triflex, that stands the hot acid. Then they added a brick sheathing to protect the rubber from the slicing, banging of fast-moving steel.

Acid leaks stopped wherever this B.F.Goodrich lining was used. The waste and hazard of messy, acid-wet floors became a thing of the past. At the Kaiser Steel plant pictured here, the B.F.Goodrich rubber-lined tank has been in constant use four years without maintenance expense of any kind. In many plants, linings have been in service 15 or 20 years.

B.F.Goodrich salesmen and distributors have exact specifications for the B.F.Goodrich rubber lining used in this steel mill, as well as information about products featured in hundreds of other B.F.Goodrich success stories. And, as factory-trained specialists in rubber products, these men *can* answer your questions about *all* rubber products. *B.F.Goodrich Industrial Products Co., Dept. M-889, Akron 18, Ohio.*

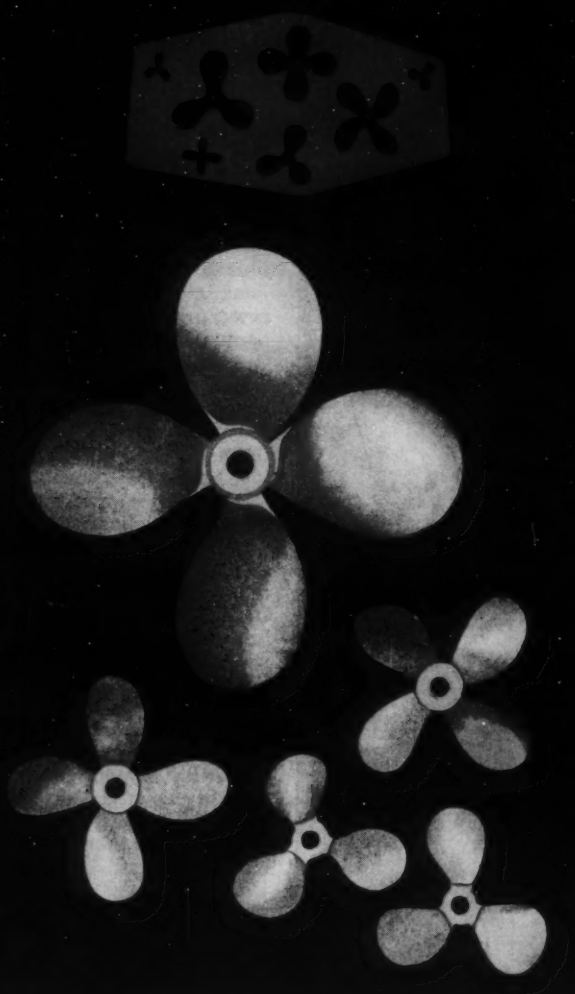
B.F.Goodrich

INDUSTRIAL PRODUCTS

SERVICE FOUNDRY

A DIVISION OF AVONDALE MARINE WAYS, INC.

pioneer of stainless steel propellers



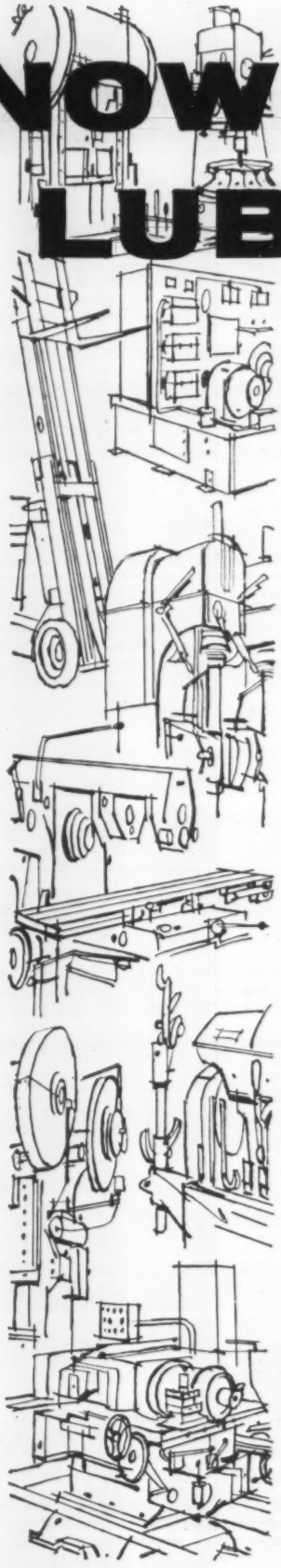
Not so very many years ago stainless steel propellers were experimental in nature. Many thought that they would be too high priced to ever compete with traditional propeller alloys. But we believed in the potential of steel. Our pattern, casting and machining facilities went into production—we manufactured some of the first stainless steel wheels. Today no doubt remains—stainless steel has proved itself far superior as a propeller alloy, and it can and is competitively priced. We are now manufacturing some of the largest stainless steel blades in the nation, and are prepared to design to your own specifications.

SHIP BUILDING • SHIP REPAIRING • FOUNDERS • PROPELLERS • STRUCTURAL STEEL

AVONDALE MARINE WAYS, INC.

CABLE ADDRESS "AVONWAYS"

P. O. BOX 1030 • PHONE UNiversity 6-4561 • NEW ORLEANS 8, U. S. A.



NOW! ATLANTIC LUBRICANT 54

...the one lubricant for practically every industrial need

New Atlantic Lubricant 54 is industry's closest approach to the universal grease lubricant. The use of this distinctively purple grease in your plant practically assures the correct choice in any application. It has given outstanding performance in all types of machinery.

Every shop, large or small, can make economical use of Atlantic Lubricant 54 because it gives

- ... multiplicity of use—reduces chance for error, cost of warehousing, and handling
- ... outstanding rust protection—protects ferrous surfaces under wet conditions
- ... excellent lubrication performance from very low to extremely high temperatures
- ... unusual stability against oxidation and softening under rugged working conditions
- ... positive identification due to its purple color

This product is available from warehouses conveniently located throughout Atlantic's marketing territory and may be ordered through the nearest office listed below.

ATLANTIC

LUBRICANTS • WAXES
PROCESS PRODUCTS

PHILADELPHIA, PA.
260 So. Broad St.

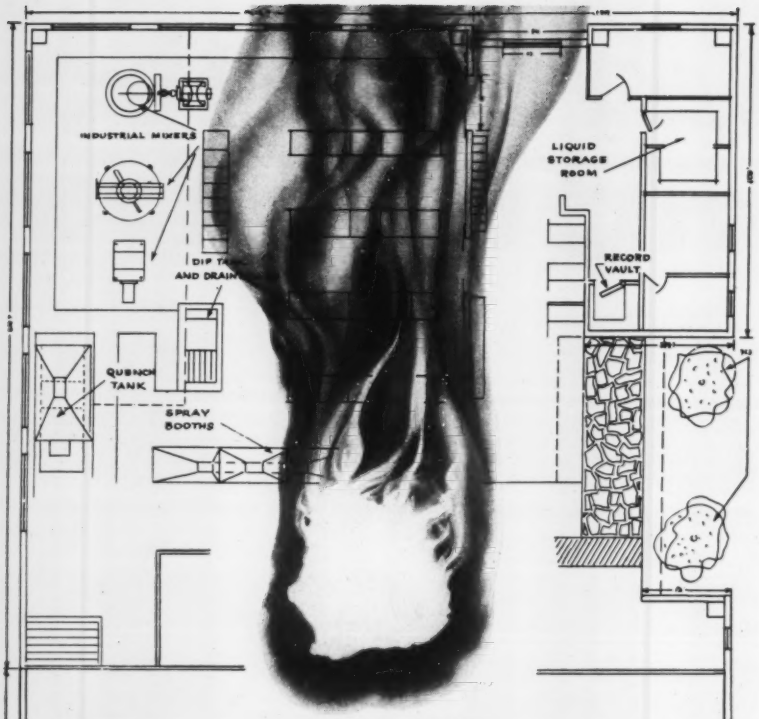
PITTSBURGH, PA.
Chamber of Commerce Building

PROVIDENCE, R. I.
430 Hospital Trust Building

SYRACUSE, N. Y.
Salina and Genesee Streets

READING, PA.
First and Penn Avenues

CHARLOTTE, N. C.
1112 South Boulevard



Where will FIRE start in your plant?

Whatever the hazard, dip tanks, record storage vaults, spray booths, Kidde's carbon dioxide fire extinguishing system protects your plant 24 hours a day, gives you the fastest, safest fire protection ever made! Product of more than thirty years' experience, the Kidde system boasts more features than any other make on the market today. Features like:

All operating parts completely enclosed to guard against fouling or accidental operation.
No clumsy triggering methods or falling weights.
Self-contained; no outside power needed.
Visual indicators to show if system has been operated.
Easy testing of all operating parts.
No parts to replace after operation or test.

Fast-acting, clean carbon dioxide does the job that no other extinguishing agent can do: snuffs fire out in seconds, then vanishes into thin air. Won't harm valuable machinery, leaves no mess to clean up. Write for Kidde's pressure operated carbon dioxide fire extinguishing systems booklet today.

Kidde (K Kidde) **Walter Kidde & Company, Inc.**
360 Main St., Belleville 9, N. J.
Walter Kidde & Company of Canada Ltd., Montreal—Toronto

LETTERS TO THE EDITORS

Profits from Editorials

Your editorial, "Partners in Business" (Mar. 4, page 51), was interesting.

In our business, we are constantly in contact with large and small manufacturers and can see the daily relations which exist between them. I feel as you do that there is a considerable amount of misunderstanding and that big and little businesses are both necessary to our economic health.

I read your fine editorials in each issue with much interest and profit.

Robert H. Newton
Robert H. Newton Co.
Cleveland

Job Platers in Plight

Your Feb. 25 article, "Platers' Prospects Brighten" (Feb. 25, page 55), presented succinctly and interestingly the job platers' plight in the current nickel dilemma.

Our appreciation and gratitude to STEEL for giving our side of the story, a woeful tale of close to 3000 job platers who have been discriminated against since the Korean War.

P. Peter Kovatis
Executive Secretary
National Association of Metal Finishers
Cedar Grove, N. J.

Facts Come from STEEL

Thank you for the reprint of your Program for Management article, "Management Development—The Care and Feeding of the Junior Executive" (Feb. 11, page 93). I am looking forward to receiving the next article, "Grooming Middle Managers," which will appear in your Mar. 18 issue.

We have been asked many times where some of the facts that we refer to come from, and, of course, we always tell them that it is from STEEL.

J. F. Carle
Director of Education
Lincoln Extension Institute Inc.
Cleveland

Article Is of Great Benefit

Please send me one copy of the article, "Ideas for Waste Treatment" (Feb. 18, page 150). It will be of great benefit to me in my work in industrial chemistry and metallurgy.

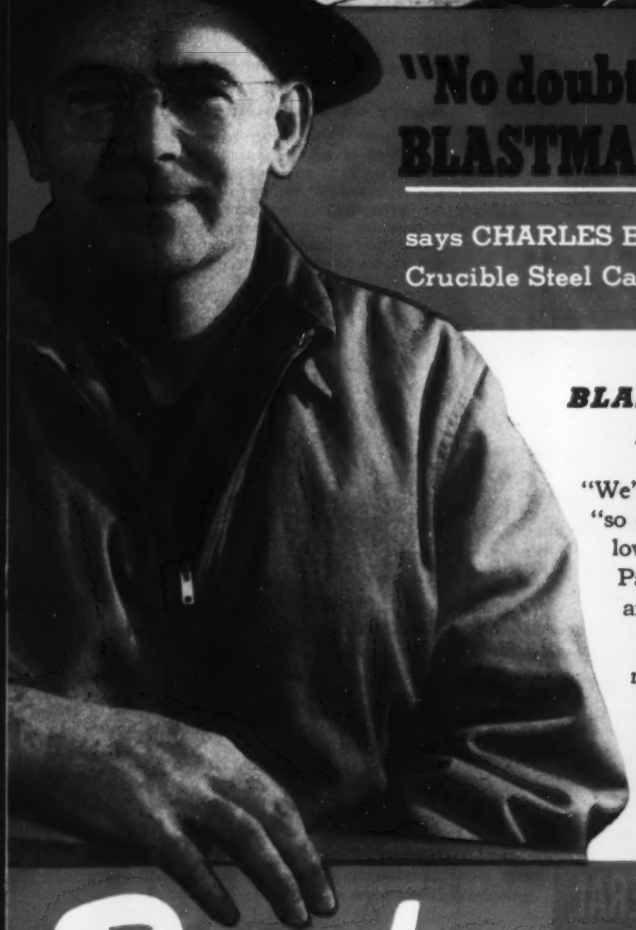
Maurice A. Heckman
R.D. No. 3
York, Pa.

Agrees with Editorial

Congratulations for having sufficient fortitude to stand up and tell our apparently befuddled people in your editorial, "Don't Cry Wolf" (Feb. 4, page 57), the danger of letting themselves be talked into a depression.

I have never in my lifetime seen American business so willing to be talked into a depression when, as you

(Please turn to page 12)



"No doubt about it! That PANGBORN BLASTMASTER was a smart buy!"

says CHARLES BACHMAN, Plant Engineer,
Crucible Steel Casting Co., Lansdowne, Pa.

BLASTMASTER® has eliminated need for a second shift in this cleaning department.

"We're interested in production figures," says Mr. Bachman, "so our blast cleaning equipment has to do good work at low cost. After studying the situation, we picked a Pangborn Blastmaster. It does the kind of job we like and its features are everything they're expected to be!"

If *you* need blast cleaning equipment, look at all makes. Then check the Pangborn Blastmaster. It offers many exclusive features plus a choice of sizes to fit your needs—1½, 3, 6, 12, 18 and 27 cu. ft. Write for Bulletin 703 to PANGBORN CORPORATION, 1600 Pangborn Boulevard, Hagerstown, Maryland.

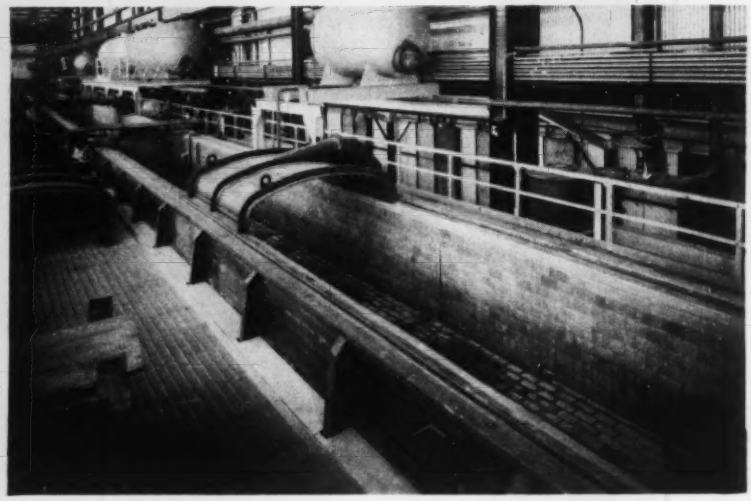
Pangborn blast cleans cheaper

the BIG difference

BETWEEN

AVERAGE and ATLAS

PICKLE-TANK CONSTRUCTION



...EXPERIENCE!

Since Atlas installed the first continuous brick-lined pickler in 1933, more than 10,000,000 pounds of Atlas corrosion-proof materials of construction have been used to build all types and styles of pickling tanks throughout the world. The huge pickling tank pictured above was recently installed in a large eastern steel mill and is a typical example of Atlas design and construction in the metalworking field.

Experience has taught us a successful pickling tank requires an integrated combination of highest quality materials, tested and proven design, expert and craftsman-like construction. Only Atlas offers such a service ... a sole source of responsibility, standing behind their installation, controlling every step of the job, from the basic manufacture of the products to the final use of the material.

Why choose the average when you can benefit from the BIG difference of an Atlas pickling tank? One that will be a permanent asset ... deliver full service ... withstand the rugged abuse of modern pickling operations and not be hampered by down-time for repair of corrosion damage. Make sure you specify ATLAS for your next installation.

Write for Bulletin CC-3 giving complete information on the Atlas line.

ATLAS MINERAL PRODUCTS COMPANY
MERTZTOWN, PENNSYLVANIA

LETTERS

(Concluded from page 10)

so ably point out, there just isn't an iota of reasoning behind the calamity talk.

I hope that more courageous editors will pick up the reins and start to tell people how well off they are before, alas, it is too late.

Carl E. Schmitz
Executive Vice President
Crane Packing Co.
Morton Grove, Ill.

We would appreciate 12 copies and would like to commend you on this realistic editorial. We agree it is necessary to take an optimistic view in the present day market.

C. H. Walles
District Manager
Wire Rope Division
John A. Roebling's Sons Corp.
Chicago

Reprint to AWS Committee

If you could spare 15 copies of your article, "Primer for In-Plant Training" (Jan. 28, page 68), we would appreciate them. As chairman of the in-plant training subcommittee of the American Welding Society, we would like to distribute copies of this article to our members.

Orville T. Barnett
Assistant Manager
Metals Research Department
Armour Research Foundation of Illinois
Institute of Technology
Chicago

Query on Warm Heading

In your Production Ideas article No. 7, "Cold Heading Branches Out" (Jan. 14, page 71), you refer to warm heading operations on page 74. We would be interested in knowing the names of companies which have experimented with the technique. Also, please send six copies of this article.

G. Fields
Purchasing Agent
Voi-Shan Mfg. Co.
Division of Pheoll Mfg. Co.
Culver City, Calif.

• *Contact Earle A. Channer, vice president, H. M. Harper Co., Morton Grove, Ill.*

Scrap Price Graph Noted

We note in your Feb. 25 issue (page 153) an interesting graph of the steelmaking scrap price composite for 1956 and the beginning of 1957. We would appreciate a reprint of your 1955 graph if it is available.

A. Jansen
Capitol Steel Corp.
New York

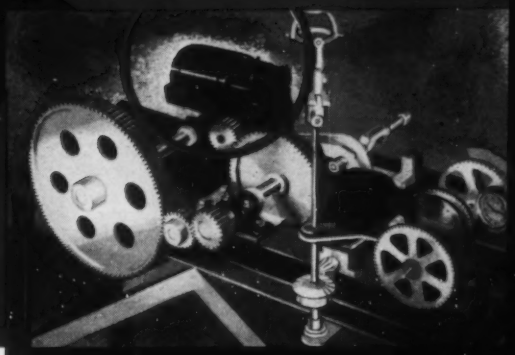
Magnesium Storage and Usage

We were interested in seeing your story, "More Work for Magnesium" (Jan. 28, page 105). We feel the statement that we do not object to the storage or machining of magnesium is much oversimplified.

While it is true that much has been done to assure the safety of operations involving the storage or use of magnesium in past years, certainly the hazard of this is well recognized and requires careful consideration and attention to keep the fire hazard at a minimum.

J. H. Keenan
Assistant General Manager
Factory Insurance Association
Eastern Regional Office
Hartford, Conn.

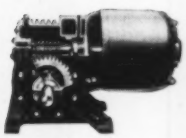
Nothing Cuckoo about this clock!



The "works" of a tower clock. ⅓ H.P., 115/230 volt, 60 cycle, 1 phase Master Right Angle Gearmotor supplies main drive with a synchronous output speed of 30 R.P.M.

You may not need clock drives, but time (production time) is a problem everywhere—and that calls for the most dependable, most efficient use of electric drives—like here! This clock, with 300 lbs. of hands and four 24-foot dials is powered by a Master Gearmotor driving a precision gear train. With that accurate Master drive, here's a one-jewel clock!

Are you sure you've got the right answer to your drive requirements? Master components can be integrated in any combination to give you the right horsepower, right shaft speed, right mounting features, in a single, efficient, compact unit. Now's the time to let us prove it.



MASTER ELECTRIC MOTORS

ANOTHER DRIVE REQUIREMENT MEETS ITS

MASTER

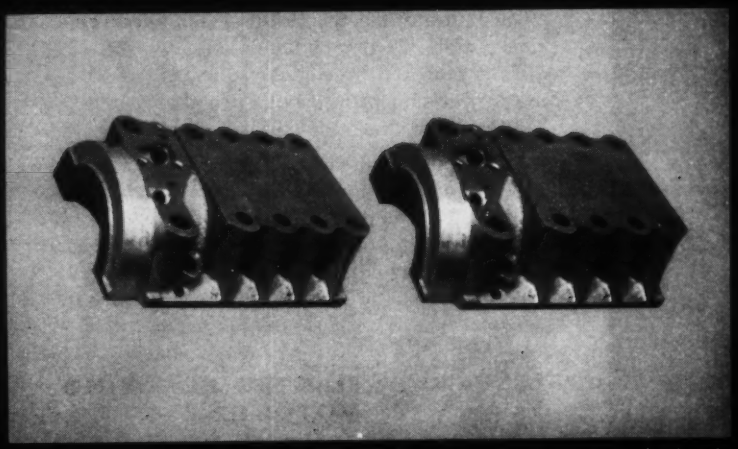
Motor Ratings	⅛ to 400 H.P. All phases, voltages, frequencies.
Motor Types	Squirrel cage, slip ring, synchronous, repulsion-start induction, capacitor, direct current.
Construction	Open, enclosed, splash-proof, fan-cooled, explosion-proof, special purpose.
Speeds	Single-speed, multi-speed, and variable speed.
Installation	Horizontal and vertical, with or without flanges and other features.
Power Drive Features	Electric brakes (2 types)—5 types of gear reduction up to 432 to 1 ratio. Mechanical and electronic variable speed units—fluid drives—every type of mounting.

THE MASTER ELECTRIC COMPANY

Dayton 1, Ohio

THREE NEW DEVELOPMENTS
Increase Production

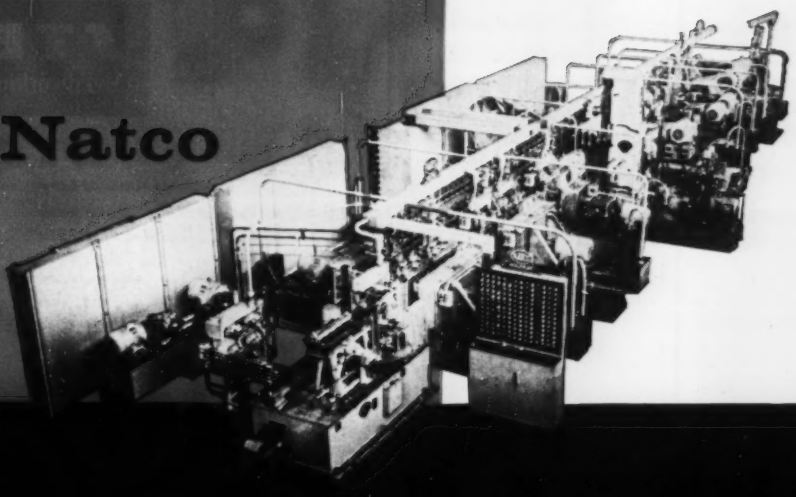
2-at-a-time processing



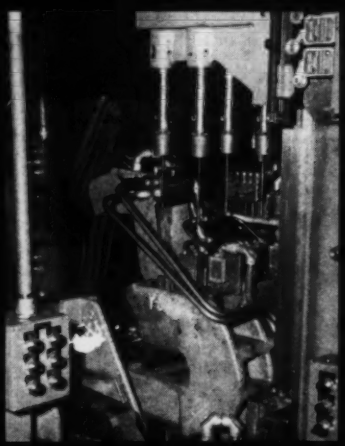
300 HP Natco greatly increases production by processing two complete sets of bearing caps at once

Bearing caps—240 *sets* per hour—six times the production rate of the machine replaced! This new Natco processes two complete sets at once. It loads surface-broached castings automatically, performs 80 machining operations, places matched sets of finished bearing caps on the assembly conveyor. In addition to broaching and sawing, this 300 HP, 27-station Natco, drills, reams taps, turns, mills, probes and faces.

help this Natco 600%

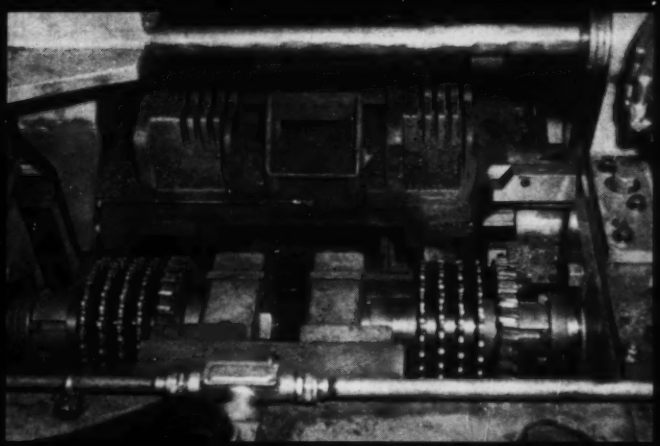


Unique Broaching Station



Fully automatic broaching station eliminates need for withdrawing broaching tools after cut. Broaching tools are pulled completely through hole, removing .030" stock.

New Rigid Saw Station



80 HP sawing station cuts two castings into complete sets of 5 caps each. All surfaces parallel within .0015". Fixture feeds castings into stationary mounted saws, providing rigidity for accurate 14 ipm cutting.

Whatever your high production problem, our engineers will work closely with your people to develop exactly the method and the machine to do your job best. Besides special way-type, index and transfer machines, Natco also builds multiple drilling, boring, facing and tapping machines. Call your nearest Natco office in Chicago, Detroit, Buffalo, New York, Boston, Philadelphia, Cleveland and Los Angeles. Distributors in other cities.

Partners in Production

NATCO

NATIONAL AUTOMATIC TOOL COMPANY, INC. *Richmond, Ind.*

Ask for information about the PAYD (Pay-As-You-Depreciate) Finance Plan

Shorten load handling time with a READING CRANE!

● One well-known stove manufacturer wanted to speed-up assembly—a call to Reading Engineers led to complete solution. A 10-ton, double I-Beam, cab-controlled Reading Crane brought even better results than expected.

Get complete information from our latest 16-page bulletin "The Why and How of Faster Production". Write today.

READING CRANE & HOIST CORP.

CHAIN HOISTS • OVERHEAD TRAVELING CRANES • ELECTRIC HOISTS

2102 ADAMS ST., READING, PA.

WARD STEEL CO.

We specialize in
FINISHED STEEL
BARS—TUBES—STRIP

PROMPT WAREHOUSE SERVICE ONLY

Most Complete Stock in America of
BLUE TEMPERED SPRING STEEL

We believe that the way to sell is to carry a stock which permits satisfying any reasonable warehouse demand.

87A Ridge Ave. Ext. Phone UN 4-2460
CAMBRIDGE 40, MASS.

Branch:
3042-3058 W. 51st Street, CHICAGO, ILL.
Phone Grovehill 6-2600

STEEL The Metalworking Weekly

Editor-in-Chief, IRWIN H. SUCH
Editor, WALTER J. CAMPBELL
Associate Managing Editors, VANCE BELL, JOHN S. MORGAN

WILLIAM M. ROONEY .....Market Editor
VAN CALDWELL .....Steel Plant Editor
HARRY CHANDLER .....Copy Editor
FRANK R. BRIGGS .....Associate Editor
ROBERT O. JAYNES .....Associate Editor
AUSTIN E. BRANT .....Assistant Editor
BYRON E. KENNEL .....Assistant Editor
ROSS WHITEHEAD .....Assistant Editor
GLENN W. DIETRICH .....Assistant Editor
HORACE L. SAMFORD .....Assistant Editor

ALLEN G. GRAY .....Technical Editor
ROBERT F. HUBER ....Machine Tool Editor
J. D. KNOX .....Consulting Editor
HAROLD B. WILSON .....Assistant Editor
WILLIAM V. WALLACE JR. ..Assistant Editor
MARY T. BORGERHOFF .....Assistant Editor
MARY ALICE EARLY .....Assistant Editor
EILEEN CORTES .....Assistant Editor
MARY ANN STUVE .....Editorial Assistant
JANE WEDGE .....Editorial Assistant

BETTY ZAYAC .....Editorial Assistant
THOMAS H. BRYAN, TOM WELSH, Art Editors
IRENE KASNER, Editorial Service

Resident Editors

New York 17 .....60 E. 42nd St.
B. K. PRICE, L. E. BROWNE
STANLEY B. STEWART
Murray Hill 2-2581

Chicago 11 .....520 N. Michigan Ave.
ERLE F. ROSS, WILLIAM E. DEAN
Whitehall 4-1234

Pittsburgh 19 .....2837 Koppers Bldg.
ROBERT M. LOVE, Atlantic 1-3211

Detroit 35 .....15800 W. McNichols Rd.
A. DONALD POSTMA
Broadway 3-8150

Washington 4 ....1123 National Press Bldg.
JOHN R. BOTZUM
Executive 3-6849

London, 2 Caxton St., Westminster S. W. 1
VINCENT DELPORT, European Editor

Editorial Correspondents

Birmingham—Birmingham 3-1121 R. W. KINCEY
Buffalo—Emerson 5385 ....GEORGE E. TOLES
Youngstown—Riverside 7-1471 ..GEO. R. REISS
Los Angeles—Webster 5-3040 NORMAN LYNN
San Francisco—Yukon 6-5151 EDWIN HAVERTY
Seattle—Melrose 1895 .....R. C. HILL

Cincinnati—Beechmont 1-9607....DICK HAVLIN
Toronto, Canada—Empire 4-9655..F. S. TOBIN
Birmingham, England .....J. A. HORTON
Paris, France .....LEON JAUDOIN-PROM
Brussels, Belgium .....PAUL DE KEYSER
Dusseldorf, Germany ....DR. HERBERT GROSS

St. Louis—Parkview 7-8510, MAC L. HUTCHENS

BUSINESS STAFF

Business Manager, D. C. KIEFER

Advertising Director .....H. G. ROWLAND
Advertising Service Mgr. ....DORIS MITCHELL
Production Manager .....A. V. ANDERSON
Classified Advertising .....EVELYN DIETZ

Promotion Director .....S. F. MARINO
Circ. & Research Dir. ....N. R. LADABOUCHE
Circulation Manager .....G. R. EBERSOLE
Reprints .....JUNE SCHILENS

Advertising Representatives

New York 17 .....60 E. 42nd St.
K. A. ZOLLNER, GUY LABAW
Murray Hill 2-2581

Wynnewood, Pa. (Phila.) 200 Wynnewood Ave.
WM. J. VERSCHOOR—Midway 2-6512

Farmington, Conn. .....12 Farmstead Lane
CALVIN FISHER JR.—Orchard 7-1756

E. Rochester, N. Y. ....217 Ridgeview Dr.
HAROLD A. DENNIS—Browning 2105

Pittsburgh 19 .....2837 Koppers Bldg.
J. C. SULLIVAN—Atlantic 1-3211

Cleveland 13 .....Penton Bldg.
J. K. GILLAM, N. W. MANNING
Main 1-8260

Cincinnati 6 .....2215 Victory Pkwy.
E. L. FRANKE—Parkway 1-0711

Detroit 35 .....15800 W. McNichols Rd.
C. A. TALLINGER JR. Broadway 3-8150

Chicago 11 .....520 N. Michigan Ave.
L. C. PELOTT, W. L. POLAND
WM. J. D'ALEXANDER
Whitehall 4-1234

Los Angeles 36 .....5943 W. Colgate Ave.
F. J. FULLER—Webster 1-6865

San Francisco 4 .....57 Post St.
Robert W. Walker Co.—Sutter 1-5568

Griffin, Georgia .....1106 Pine Valley Rd.
FRED J. ALLEN—Griffin 7854

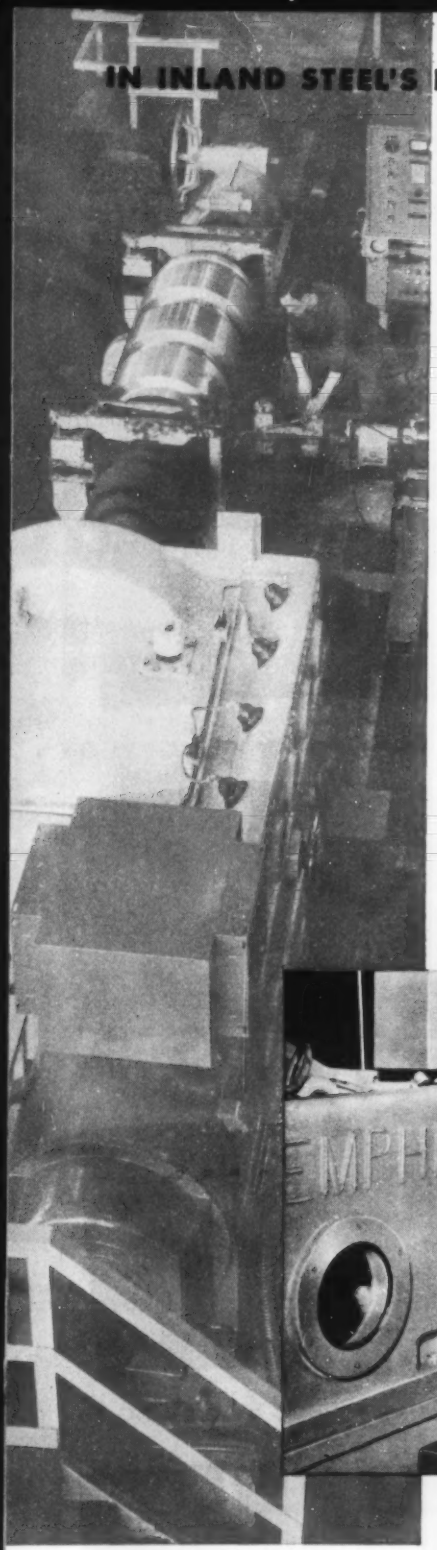
BPA

NBP

Published Every Monday By
THE PENTON PUBLISHING CO., Penton Bldg., Cleveland 13, O.
MAin 1-8260

GEORGE O. HAYS .....President
RUSSELL C. JAENKE .....Executive Vice President
FRANK G. STEINEBACH .....Vice President and Secretary
FRANK O. RICE .....Vice President
JOSEPH P. LIPKA .....Treasurer and Assistant Secretary

Also Publisher of
FOUNDRY, MACHINE DESIGN, NEW EQUIPMENT DIGEST, AUTOMATION
Member of Business Publications Audit of Circulation Inc., Society of Business Magazine Editors and National Business Publications Inc.



IN INLAND STEEL'S ROLL DEPARTMENT

New Mack-Hemp electronic contouring lathe removes metal at peak rates with .001" accuracy

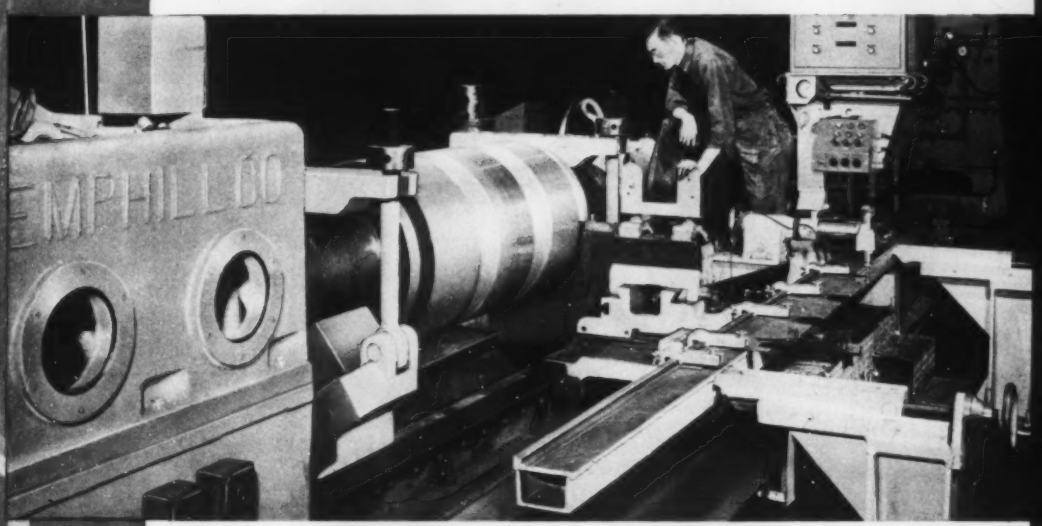
An electronic "pilot" guides this 48" Mackintosh-Hemphill contouring lathe recently installed in the Roll Department at Inland Steel Company's Indiana Harbor Works. It is so precise that the lathe can finish contours into a roll without deviating more than .001" from the pattern on the full-size template.

Stylus contact with the template controls the lathe's longitudinal- and cross-feed motors through electronic linkages. Thus, dual feed motion response of the tool holder carriage is instantaneous and smoothly continuous. Any conventional groove shape can be duplicated—it is even possible to make an accurate cut on a shoulder vertical to the axis of the roll.

But this precision of control is only one reason why the big lathe can turn shape rolls so rapidly. It has been designed and built to handle some of the heaviest torsional loads ever imposed on a lathe. For example:

It can operate continuously through a ⅞" cut depth with feeds between .060" and .100", and with spindle speeds up to 62 RPM. It can turn rolls or forgings 50" in diameter and 18 feet long.

If you are planning to install new large-roll turning capacity, you'll be wise to investigate these cost-cutting automatic contouring lathes. Write us today for complete information. They're available in 48", 60" and 72" sizes.



Inland's new 48" Mack-Hemp automatic lathe here is cutting passes into a new roll for a 3-high structural mill that rolls 15" I-beams. Hardness of the roll is 42 Shore.

MACKINTOSH-HEMPHILL
DIVISION OF
E. W. BLISS COMPANY

Makers of the rolls with the Striped Red Wabblers

MACKINTOSH-HEMPHILL DIVISION · PITTSBURGH · U.S.A. · BLISS

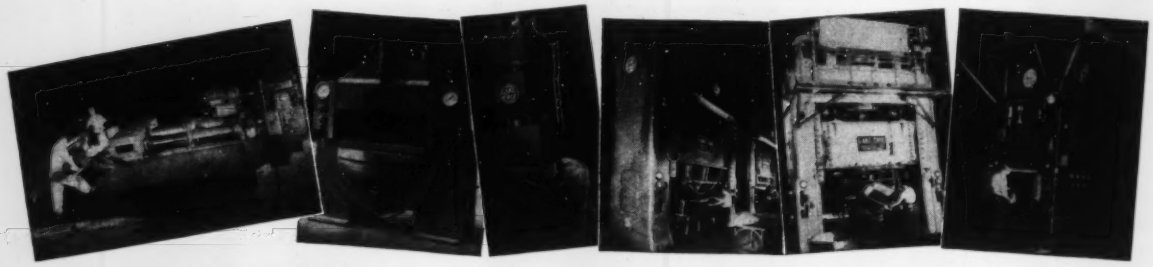
901 Bingham Street, Pittsburgh 3, Pa.

cast mill rolls • Johnston cinder pots • rotary tube straighteners • end-thrust bearings
heavy duty lathes • steel and special alloy castings

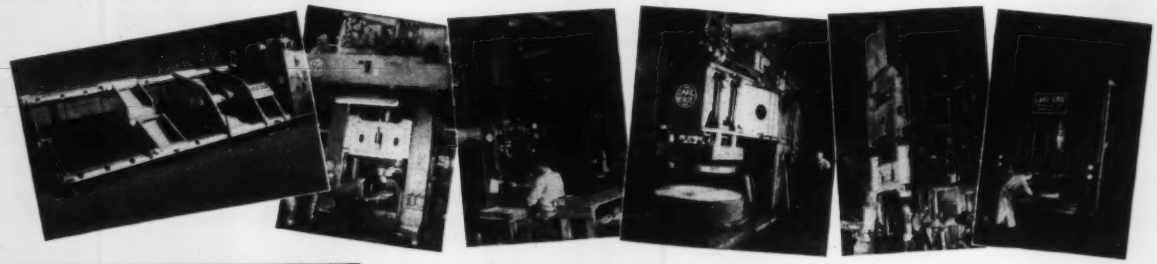
What we did for OTHERS

We have developed more than 3,500 *different designs* of hydraulic presses of *all types* to cut costs, simplify manufacture, improve quality and increase production for others.

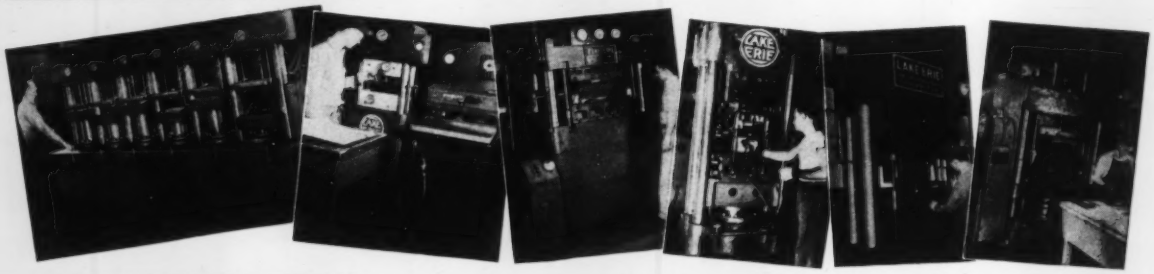
FORMING • EMBOSSING • COINING



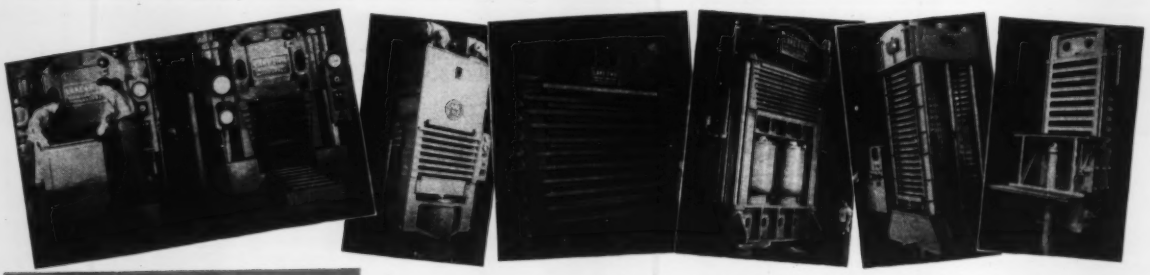
METAL WORKING DRAWING • BENDING • FORCING



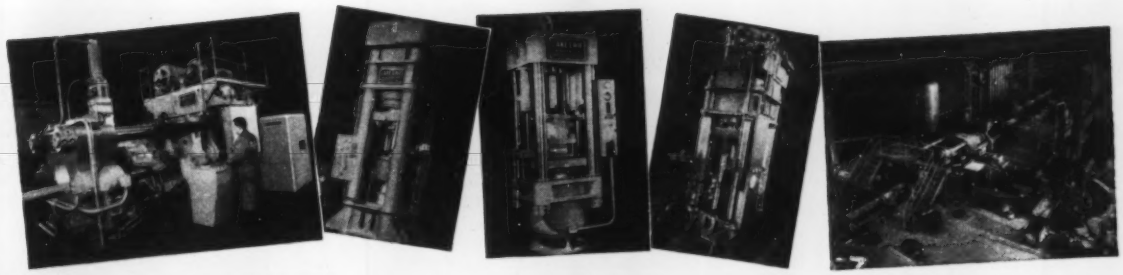
METAL WORKING FORGING • HOBBING • FLANGING



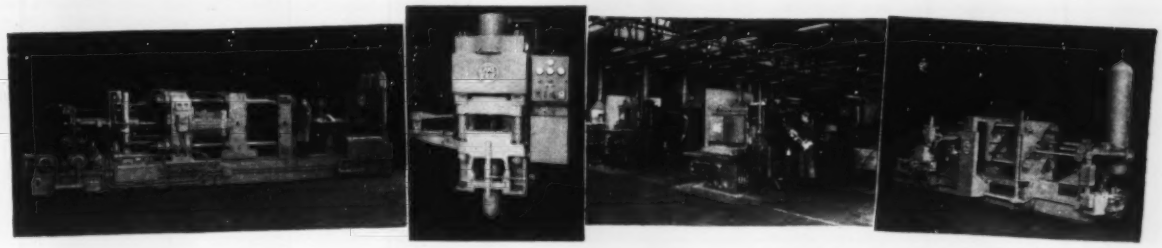
PLASTIC MOLDING COMPRESSION • TRANSFER • LABORATORY



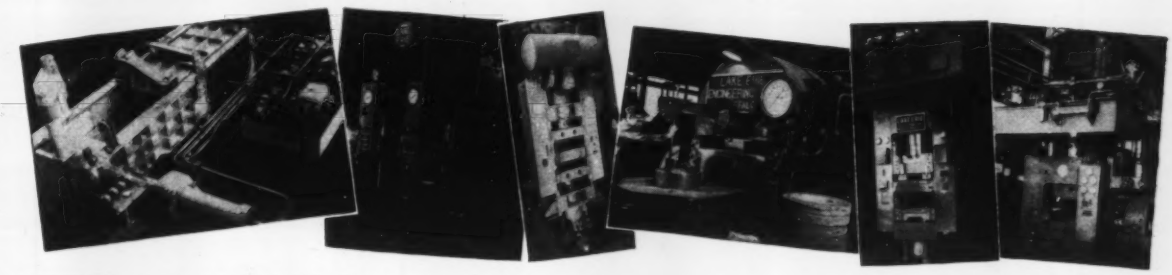
WOOD & PLASTIC PANELS HARDBOARD • WALLBOARD • PLYWOOD • LAMINATES



EXTRUSION PRESSES LEAD • CARBON • NON-FERROUS METAL



DIE CASTING HOT CHAMBER • COLD CHAMBER • VERTICAL



MISCELLANEOUS STRAIGHTENING • BRIQUETTING • BALING • POWDERED METAL

We can do for YOU!

With the broadest line of equipment in the entire industry, we can supply hydraulic presses for every application that are *guaranteed to lower your costs* and improve your production. A recommendation will cost you nothing. Write or phone us.

LAKE ERIE HYDRAULIC PRESSES

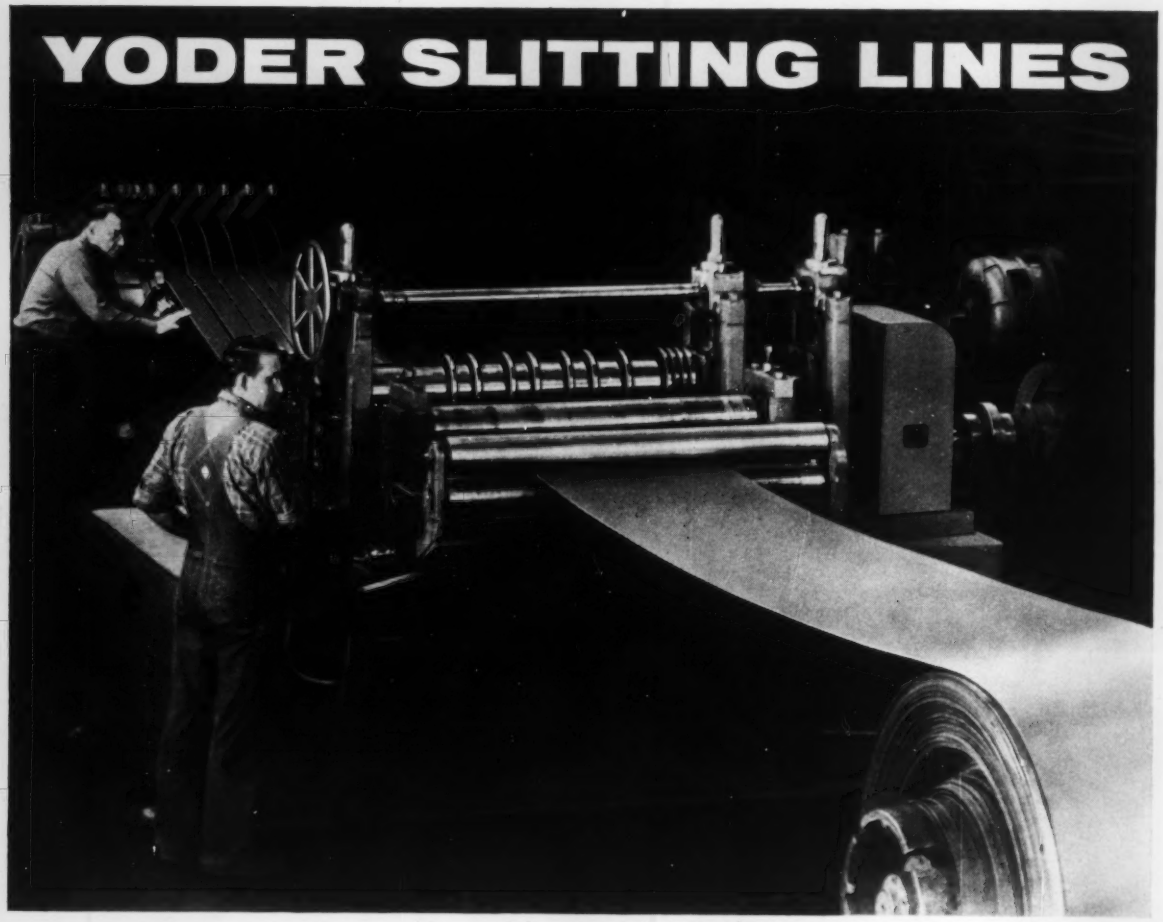
LAKE ERIE ENGINEERING CORP.

General Offices and Plant. 882 *Woodward Ave., Buffalo 17, N. Y.*
District Offices in New York, Chicago, Detroit, Pittsburgh
Representatives in Other U. S. Cities and Foreign Countries

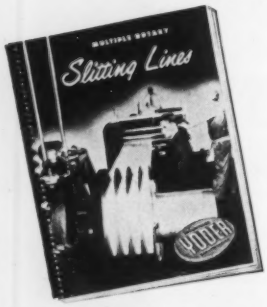
LAKE ERIE®

Manufacturers of the most complete line of hydraulic presses for all industry

YODER SLITTING LINES



pay big dividends working only one day per week!



The Yoder Slitter Book is a comprehensive treatise on slitter operation and economics, with time studies, cost analyses and other useful data. It is yours for the asking.

In one plant, two Yoder tube mills and about 50 punch presses are being supplied with slit strands by one Yoder Slitting Line operated an average of only *seven hours per week.*

In another plant, a Yoder slitting line, *operated from six to eight hours per week,* is supplying two intermittently operated roll forming machines with total requirements averaging 100,000 feet per week.

These typical examples demonstrate, first, the big potential output of a relatively small, inexpensive Yoder standardized Slitting Line and, secondly, its big profitability. Assume production of only 35 tons of slit strands per 8 hour shift, one day per week, and the total per year would be 1750 tons. Estimating the saving in slitting cost at only one-half cent per lb., the total annual saving would be $17,500.00.

Besides the big convenience of doing your own slitting, such savings will often repay the investment in a few months.

THE YODER COMPANY 5502 Walworth Avenue • Cleveland 2, Ohio, U.S.A.

ENGINEERING YODER MANUFACTURING

ROTARY SLITTING LINES

COLD ROLL FORMING MACHINES

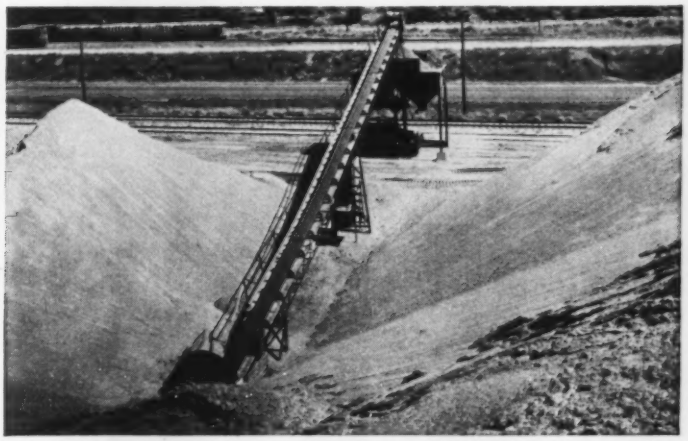
ELECTRIC-WELD PIPE AND TUBE MILLS

Now! It's

LINK-BELT

PRE-BILT

sectional belt conveyors for



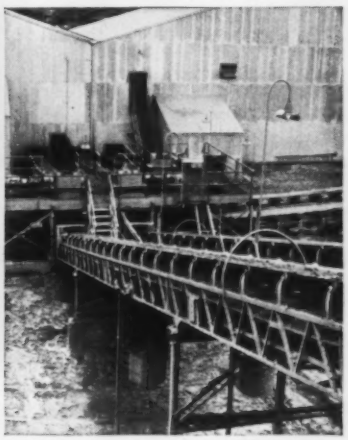
Link-Belt conveyors efficiently stock and reclaim four sizes of sand and gravel at one of the industry's most modern yards.

EASY SELECTION... QUICK DELIVERY

Order from nearest of 9 plants—reduce costs and delays

HERE's today's top answer to efficient, economical, long-life bulk handling — Link-Belt PRE-BILT sectional belt conveyors. They combine standard products, sectional truss frames and supporting bents to meet your exact requirements. Let a Link-Belt representative help you choose from 27 standard, packaged components — with drives up to 40 hp . . . 18, 24, 30 and 36-in. belt widths . . . 24 and 42-in. truss depths. For the full story, call your nearest Link-Belt office.

Inclines like this pose no special problems for highly-adaptable Link-Belt PRE-BILT sectional belt conveyors.



Conveyor with 30-in. wide belt handles iron ore concentrate and tailings from washing plant to loading hoppers.

Book 2579 outlines Link-Belt PRE-BILT sectional belt conveyor advantages. Write for your copy today.

FROM SELECTION TO OPERATION...AS SIMPLE AS THIS

EASY SELECTION. Your Link-Belt representative will help you select the best combination of PRE-BILT sectional belt conveyor components.

PROMPT QUOTATIONS. He will prepare a comprehensive and accurate estimate of requirements for installations that permit "on-the-ground" survey.

SIMPLIFIED PURCHASE. Parts are standardized, interchangeable, all available from one supplier. Link-Belt representative can furnish all necessary data.

QUICK DELIVERY. PRE-BILT conveyors are built at nine strategic locations and are shipped from the plant nearest you.

FAST INSTALLATION. Can be readily handled by your own erectors in most cases. Link-Belt can also furnish complete erection service and supervision.

LINK-BELT

BELT CONVEYOR EQUIPMENT 14.113

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

Use WELDED STEEL for Greater Strength with Less Weight!

The large weldment above is a 40-Ton Blank Holder for a 1000-Ton Press . . . this piece, and those illustrated at the left, are typical of thousands of Steel-Weld Fabricated parts and assemblies produced by Mahon for manufacturers of processing machinery, machine tools, and other types of heavy mechanical equipment. Are you taking full advantage of the possibilities offered by welded steel components in your product? In the design of almost any type of heavy machinery there are parts and sub-assemblies that can be produced more economically and more satisfactorily in welded steel, because, in weldments you get greater strength with less weight, plus the additional advantages of greater rigidity and predictability. If you are considering weldments, you can call on Mahon with complete confidence, because, the Mahon organization is a unique source for welded steel in any form . . . a reliable and responsible source with complete facilities for design engineering, fabricating, machining and assembling . . . a source where design skill is supplemented by craftsmanship which assures you a finer appearing product embodying every advantage of Steel-Weld Fabrication. See Sweet's Product Design File for information, or, better still, have a Mahon sales engineer call at your convenience.

THE R. C. MAHON COMPANY • Detroit 34, Michigan

Sales-Engineering Offices in Detroit, New York and Chicago

Engineers and Fabricators of Steel in Any Form for Any Purpose

MAHON

CALENDAR
OF MEETINGS

Mar. 25-27, American Society of Tool Engineers: Annual meeting, Shamrock Hilton hotel, Houston. Society's address: 10700 Puritan Ave., Detroit 21, Mich. Executive secretary: Harry E. Conrad.

Mar. 25-29, Western Metal Congress & Exposition: Biennial exposition, Pan-Pacific Auditorium, Los Angeles. Information: American Society for Metals, 7301 Euclid Ave., Cleveland 3, O. Managing director: William H. Eisenman.

Mar. 25-29, American Society for Metals: Biennial technical meeting, Ambassador hotel, Los Angeles. Society's address: 7301 Euclid Ave., Cleveland 3, O. Managing director: William H. Eisenman.

Mar. 25-29, Society for Nondestructive Testing: Biennial technical meeting, Ambassador hotel, Los Angeles. Society's address: 1109 Hinman Ave., Evanston, Ill. Secretary: Philip D. Johnson.

Mar. 26-27, Instrument Society of America, Pittsburgh Section: Annual conference on instrumentation for the iron and steel industry, Hotel Roosevelt, Pittsburgh. Information: Fred D. Marton, 845 Ridge Ave., Pittsburgh 12, Pa.

Mar. 27-29, American Power Conference: Hotel Sherman, Chicago. Information: Illinois Institute of Technology, 35 W. 33rd St., Chicago 16, Ill.

Apr. 1-3, International Acetylene Association: Annual meeting, Nicollet hotel, Minneapolis. Association's address: 205 E. 42nd St., New York 17, N. Y. Secretary: H. F. Reinhard.

Apr. 2-4, American Hot Dip Galvanizers Association Inc.: Annual meeting, Empress hotel, Miami Beach, Fla. Association's address: 1806 First National Bank Bldg., Pittsburgh 22, Pa. Secretary: Stuart J. Swensson.

Apr. 2-5, Society of Automotive Engineers: Aeronautic meeting and production forum and aircraft engineering display, Hotel Commodore, New York. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

Apr. 7-10, National Screw Machine Products Association: Annual meeting, Shoreham hotel, Washington. Association's address: 2860 E. 130th St., Cleveland 20, O. Executive vice president: Orrin B. Werntz.

Apr. 8-10, American Institute of Mining, Metallurgical & Petroleum Engineers: Open hearth and blast furnace conference, William Penn hotel, Pittsburgh. Institute's address: 29 W. 39th St., New York 18, N. Y. Secretary: E. O. Kirkendall.

Apr. 8-10, Gas Appliance Manufacturers Association: Annual meeting, Greenbrier, White Sulphur Springs, W. Va. Association's address: 60 E. 42n1 St., New York 17, N. Y. Secretary: Harold Massey.

Apr. 8-10, Metal Treating Institute: Spring meeting, Boca Raton hotel and club, Boca Raton, Fla. Institute's address: 271 North Ave., New Rochelle, N. Y. Executive secretary: C. E. Herington.

Apr. 8-10, American Society of Mechanical Engineers: Spring meeting, Dinkler-Tutwiler hotel, Birmingham. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: C. E. Davies.

Apr. 8-12, American Welding Society: Spring technical, national meeting and welding show, Sheraton and Bellevue-Stratford hotels and Convention Hall, Philadelphia. Society's address: 33 W. 39th St., New York 18, N. Y. National secretary: J. G. Magrath.

Apr. 9, Material Handling Institute: Spring membership and directors' meeting, Edgewater Beach hotel, Chicago. Institute's address: One Gateway Center, Pittsburgh 22, Pa. Managing director: R. Kennedy Hanson.

Apr. 10-11, Bituminous Coal Research Inc.: Annual meeting, Greenbrier, White Sulphur Springs, W. Va. Association's address: 803 Southern Bldg., Washington 5, D. C. Secretary: C. A. Reed.

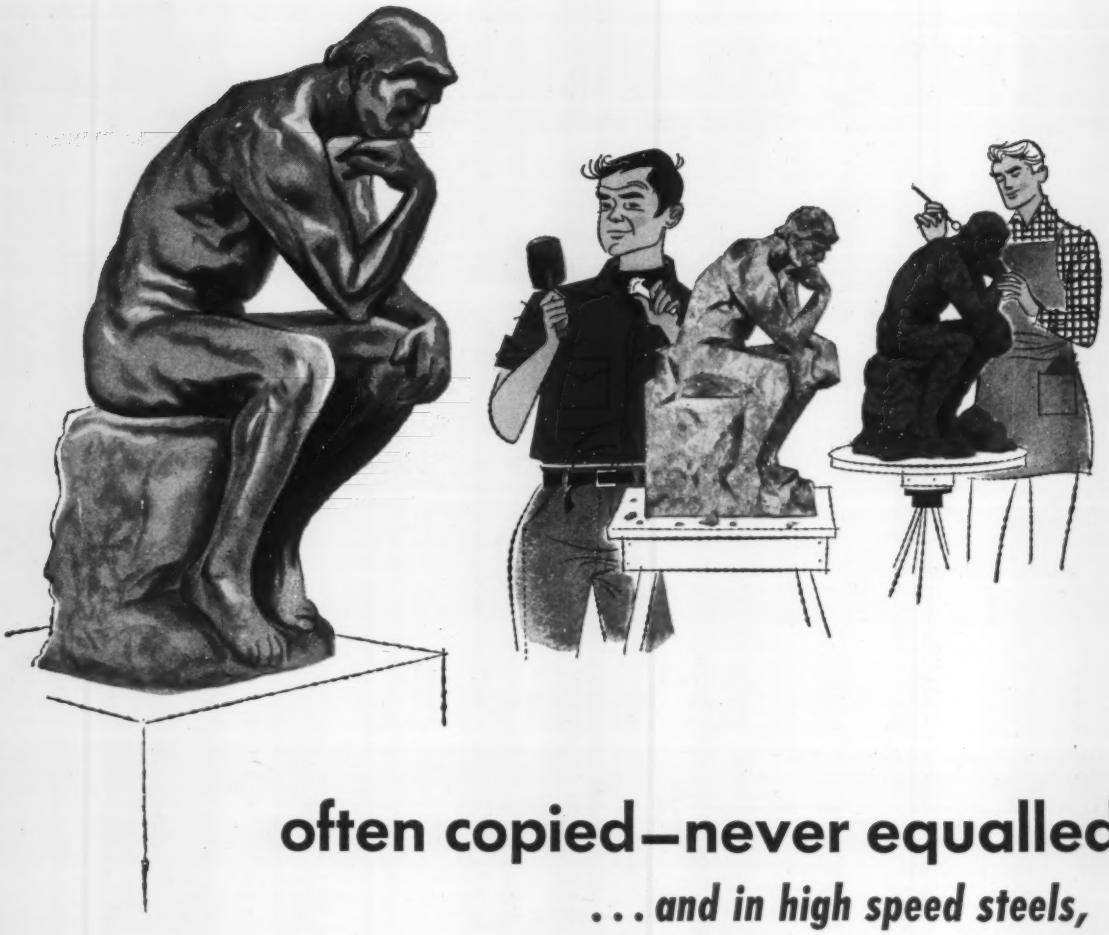
On which of these can you use help?	OK here	Can use help
PRODUCT DESIGN & DEVELOPMENT		
MANUFACTURING COST ANALYSIS		
PRODUCTION PROCESSING		
TOOL & DIE DESIGN		
MACHINE DESIGN		
TIME STUDIES AND ANALYSIS		
AUTOMATION DEVELOPMENT		
PLANT LAYOUT & SPECIFICATIONS		
PRODUCTION & QUALITY CONTROL		

Handy Check List for Executives and Chief Engineers

If you have a single check in the "can use help" column, you need the services of Pioneer Engineering & Mfg. Co. Our complete, contract engineering services are available when and where you need them. For more information, contact our chief engineer. He'll see that you get it immediately.

SINCE 1931 Pioneer ENGINEERING & MANUFACTURING CO., INC.
Telephone - TWinbrook 3-4500
19669 John R Street, Detroit 3, Michigan

INDUSTRIAL ENGINEERS, CONSULTANTS & DESIGNERS
BRANCH OFFICES IN DAYTON, OHIO, WASHINGTON, D. C. and TORONTO, ONT., CAN.



often copied—never equalled

... and in high speed steels, nothing has ever equalled REX

Crucible's REX® high speed steel is in a class by itself—has been for more than half a century. And it gets better every year. New improvements in manufacturing techniques have brought even greater uniformity and quality to its well-known properties.

But prove this for yourself—shop-test the new REX in your own plant. Check its structure, uniformity, response to heat-treatment—all-around tool performance. Try REX any way you like—you'll see for yourself why the new REX is still the *standard for comparison* in every high speed steel application.

You can get REX from stock from your nearby Crucible warehouse—or promptly by direct mill delivery. For further information on REX and the many other Crucible special purpose steels, send for the *Crucible Publication Catalog*—it's yours for the asking. *Crucible Steel Company of America, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

CRUCIBLE first name in special purpose steels

Crucible Steel Company of America

Mattison grinders used to produce high-quality engines at new Chrysler of Canada motor plant

HIGH-POWERED GRINDING METHODS AT CHRYSLER

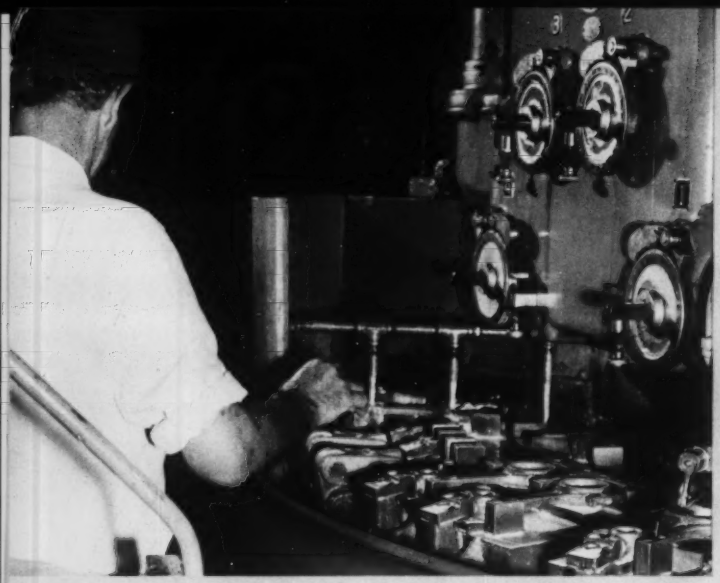
You might find the answer to your production problems in the way high-powered surface grinders are used for high-speed precision machining at the new Chrysler of Canada motor plant, Windsor, Ontario.

Quality production is one of the deciding factors in the choice of machinery for this new 13.8 acre plant. Chrysler executives and plant managers look for the best equipment available for the production of V-8 engines.

Typical of the latest types of machine tools to be installed were two Mattison Rotary Automatic Surface Grinders, one Mattison Duplex Rotary Surface Grinder, and one Mattison Vertical Rotary Surface Grinder.

Case histories on the following pages show three different examples of how Chrysler of Canada produces parts in large volume while maintaining "higher than ever" quality standards on Mattison high-powered precision surface grinders.

MATTISON
HIGH-POWERED
PRECISION

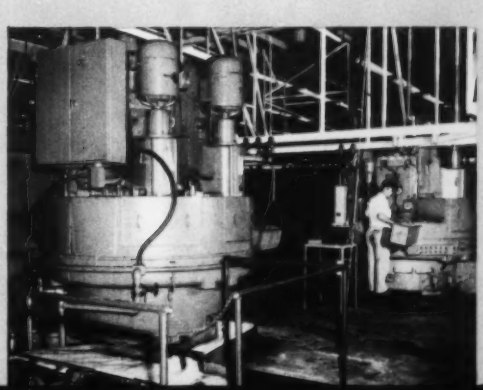


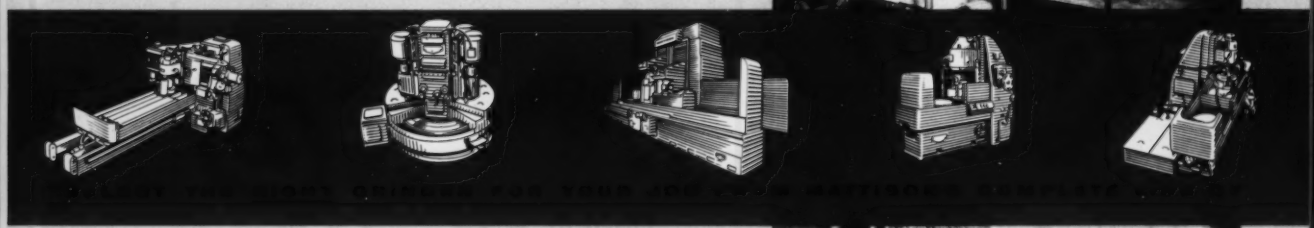
GRINDING TWO SIDES OF CONNECTING RODS AND CAPS AT RATE OF 375 EACH PER HOUR

Two Mattison No. 72 Four-Spindle Rotary Automatic Surface Grinders are used in the new Chrysler plant to grind tough, forged steel connecting rods, caps, and assemblies at a high rate of production. Chrysler specifications require precise parallelism and flatness to within .0005″; the size is held to within ±.001″.

Mattison Rotary Automatics grind tough forgings to precision limits!

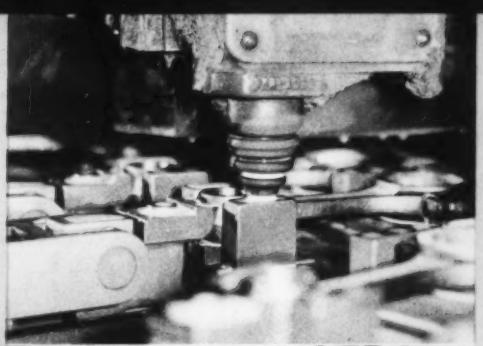
Crank and pin faces on both sides of the connecting rods and caps are ground on the first No. 72 at the rate of 375 each per hour. The second machine grinds the crank faces and pin faces of 432 complete connecting rod assemblies every hour. Accurate, one-pass grinding of flat surfaces at high speed and low cost is the big advantage of these high-powered multiple-spindle machines.

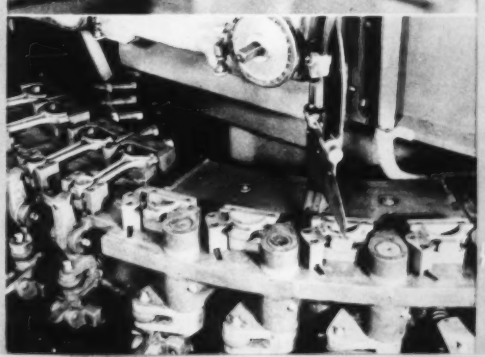




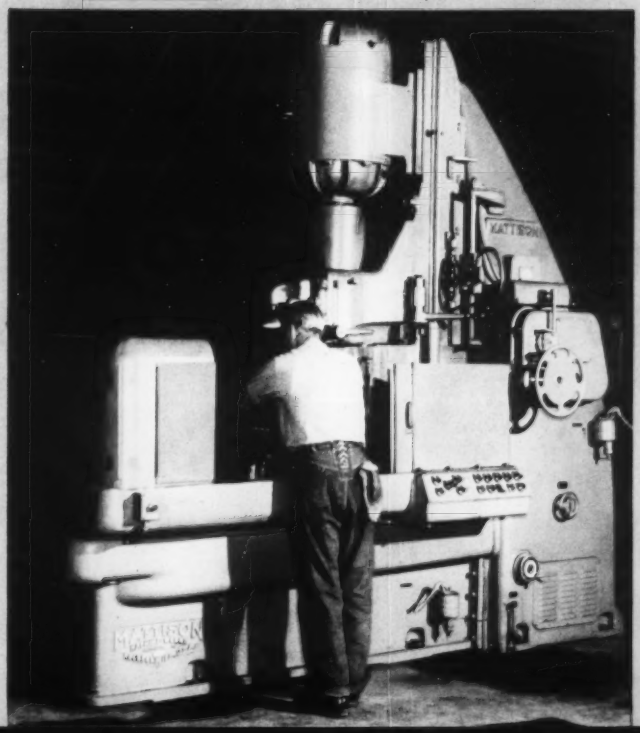
Continuous single-pass grinding, with automatic sizing and clamping

In the Chrysler installation, high production and top quality are provided by Mattison's automatic, continuous single-pass grinding, sizing, and clamping. Automatic cam-actuated clamping and unclamping devices (photo, bottom right) are used to simplify and speed loading and unloading. Centralized automatic feeds help control quality and save production time . . . wheel wear is automatically gauged and compensated for by work sizers (photo, top right) and the automatic feed mechanism. When piece-parts approach their high limit, the machine feeds down a predetermined amount from .0001 to .001″ for the finishing cut; accuracy of feed is within .0001″. For complete facts and features on Mattison Multiple-Spindle Rotary Automatics . . . including more case histories . . . write for new Bulletin No. 147-2.





THREE DIFFERENT SURFACES ON CHAIN CASE COVER GROUND AT 13 PER HOUR

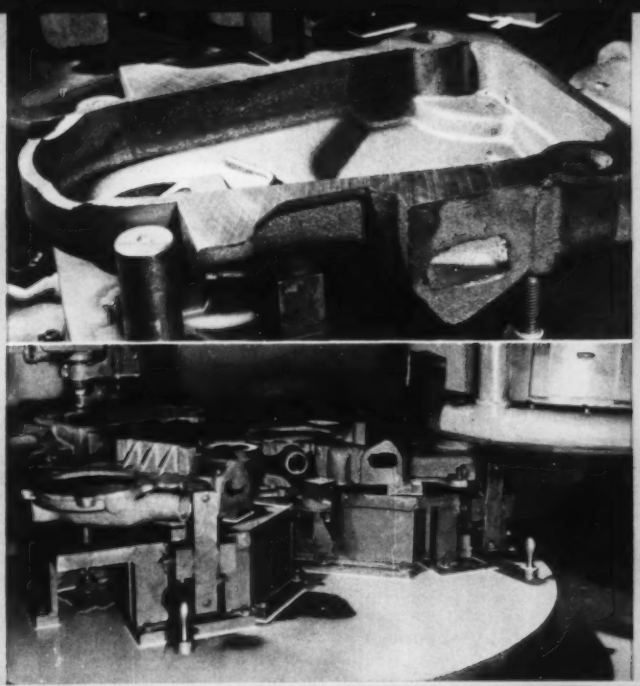


Power and rigidity pay off on heavy stock removal job!

Chrysler machines three faces of heavy cast iron chain cases in one setup on a Mattison No. 36 Vertical Rotary Surface Grinder. Production rate is 13 cases per hour grinding three different surfaces simultaneously.

Three pieces are mounted on the worktable at one time, each with a different face aligned for grinding. The table passes the work under the wheel at the rate of 30 rpm. Wheel speed is 900 rpm . . . downfeed is .060 in. per minute. Automatic sizer checks each piece as it leaves the wheel and corrects wheel feed accordingly . . . parallelism is held to .001 in. Heavy stock removal at production speeds and close tolerances on large or small surfaces is readily achieved with the machine.

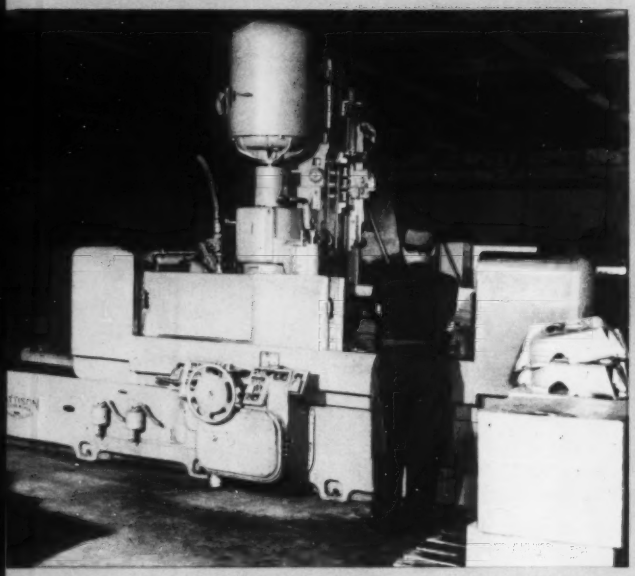
Special jig fixtures hold cases in position (photos at bottom left) and prevent deflection under high unit pressures.



Three cases are mounted at one time, each with a different face ready to be ground. Note automatic sizer in upper left-hand corner of the photo below. Write for case histories showing how Mattison Vertical Rotaries can help you control quality and costs.

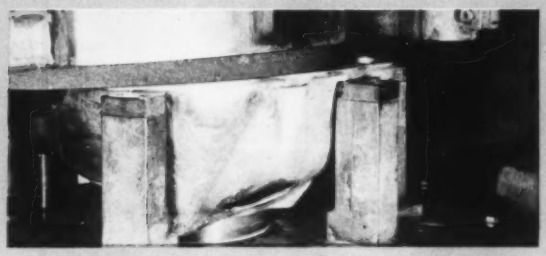
MATTISON
HIGH-POWERED
PRECISION

GRINDING METHODS
AT CHRYSLER



FINISH TWO FACES OF TORQUE CONVERTER HOUSINGS—40 PER HR

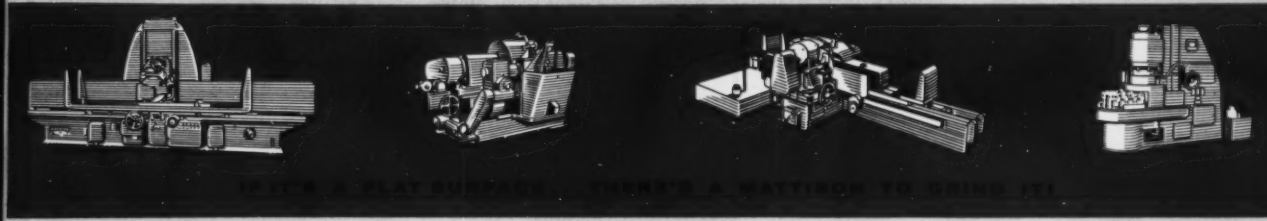
These aluminum alloy castings are finish-ground on two sides by the No. 24 Rotary Duplex at rates as high as 40 pieces per hour using special fixture. Two-table design greatly reduces down-time . . . one table is under the wheel while operator is setting up the other.



Special fixtures prevent springing aluminum alloy castings

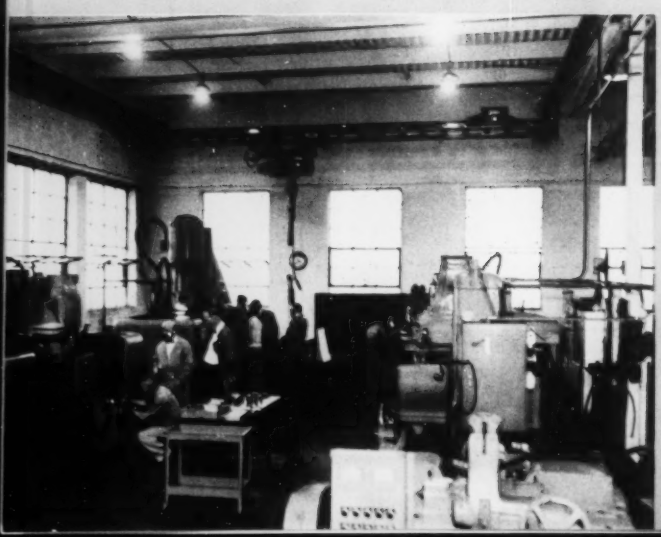
The construction of these cast aluminum alloy housings calls for special handling to avoid "springing" the work when grinding. Working with Chrysler, Mattison engineers were able to develop a special jig which holds the work rigidly . . . permits maximum stock removal and accuracy.

Using this special fixture, the machine finish-grinds engine and transmission faces of these housings . . . parallelism and flatness are held to .003" . . . wheel speed is 750 rpm . . . downfeed is approximately .140" per minute making good use of the machine's extra power and rigidity. To satisfy Chrysler's high-quality standards, it takes a machine whose massive construction guarantees rigidity and long-run consistency. High-powered spindle drive provides positive, free-cutting action, assuring high production and accuracy.



IF IT'S A FLAT SURFACE . . . THERE'S A MATTISON TO GRIND IT!

SEND US YOUR PARTS FOR FREE DEMONSTRATION GRIND!



The Mattison Methods Laboratory, equipped with all major types of modern surface grinders, face grinders, and disc grinders, introduces a new service to metalworking plants. You are invited to submit parts for sample grinds and production estimates. Please include part prints, operation or route sheets, and all special requirements for machining your pieceparts.

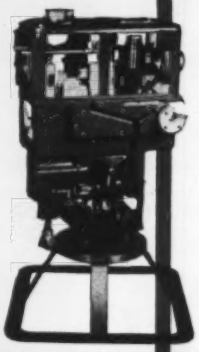
MATTISON
MACHINE WORKS
ROCKFORD ILL. U.S.A.

HIGH-POWERED
PRECISION
SURFACE
GRINDERS

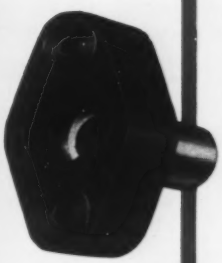
MATTISON MACHINE WORKS
ROCKFORD, ILLINOIS

5 practical ways to "streamline"

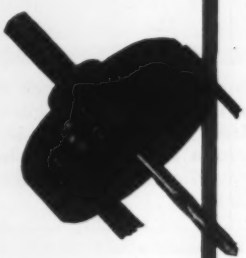
...without sacrificing fastening strength



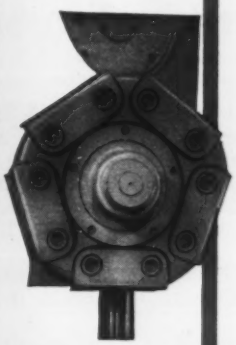
1. Counterbored holes are the simplest approach to flush surfaces using standard socket cap screws. The advantage of specifying genuine Allen ○ Head Cap Screws is the greater strength of Allenoy steel... you can use smaller sizes for closer spacing and reduced weight. Call on Allen, too, for *very large* socket-head, precision cap screws — up to 2½ inch diameter.



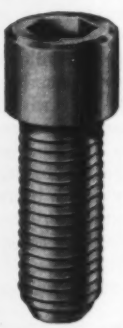
2. Countersinking enables you to get absolutely smooth external surfaces using Allen ○ Flat Head Cap Screws. Allen ○ Cap Screws feature the exclusive Leader Point which makes screw starting easier and guards against thread damage.



3. Button Head Cap Screws produce snag-free unbroken surfaces where countersinking is impractical. Button-head hex sockets are necessarily shallow. In genuine Allen ○ Button-Head Cap Screws, sockets are cold forged without broaching, in extra strength Allenoy steel... essential protection against stripping the sockets under high torque pressure.



4. A ready made hole tapped in forged steel solves many a design problem. It's called the Allenut. It can be anchored in soft material to assure durable threading, or recessed to permit tightening with an Allen Hex Key.



5. Bright finish, or rust and corrosion resistance call for Allen ○ Stainless Steel Cap Screws. They are standard stocked items (both NF & NC threads) readily available in a wide range of sizes from Allen Distributors.

YOUR ALLEN DISTRIBUTOR can give you practical help and swift service. For complete information on any technical fastening problem, write our engineering department direct.

ALLEN HEAD

ALLEN

MANUFACTURING COMPANY

Hartford 2, Connecticut, U.S.A.

A Pamarco worker sets the mill, or male die, for final pass on a roll he is engraving with a fan pattern. The roll will be used to impart the pattern to plastics and imitation leather materials. At left, skilled engraver Claude Gallois uses a graver's tool to cut a design into female die. His work will be transferred to male die for use in engraving rolls like that shown above.

Steel Tubing With Glamour

Pittsburgh Tubes Meet Exacting Pamarco Tests

Steel tubing is glamourized at Paper Machinery & Research, Inc., with engravings so intricate they are checked on a 600-power microscope.

Cold-rolled seamless mechanical tubing from Pittsburgh Steel Company is given a beauty treatment at Pamarco's Roselle, N. J., plant to achieve patterns like those pictured here.

Pamarco and its supplier, A. B. Murray Company of Elizabeth, N. J., rely on Pittsburgh Tubes to meet exacting requirements.

Pamarco makes and engraves all kinds of industrial rolls for flexographic and gravure printing, paper converting, plastics manufacturing and textile plants.

Many manufacturers of printing presses, paper converting machinery and plastics processing equipment install Pamarco rolls as original equipment. In addition, the company re-engraves rolls, rebuilds them and provides fast engineering help on industrial roll applications.

Making micro-precision rolls for such varied uses as laminating, printing, coating, embossing, ink transferring and a multitude of other duties calls for precise engineering, rigid quality control, accurate machining and finish grinding.

In every operation, quality of the steel is basic.

From the large stocks in the A. B. Murray warehouses come Pittsburgh Steel tubes of the high, uniform quality which Pamarco must have to produce the best possible industrial rolls at economical prices.

The close relationship between Pamarco and A. B. Murray is based on not only steel but also on fast, dependable service.

The service given by A. B. Murray is backed up by the dependable tubes furnished by Pittsburgh Steel which meet these requirements, as outlined by Pamarco General Manager David Killary:

• **No inclusions or seams** are permitted since a defect can mean scrapping a cylinder during machining or engraving. Mr. Killary said:

"We've had a very favorable relationship with A. B. Murray. We've had fewer inclusions, for example. Consequently, A. B. Murray has become a prime supplier. Their service is tops."

• **Grain structure** of the steel is closely checked at Pamarco. Uniformity in grain is a must since rolls are ground and re-engraved many times through the years. Hard spots or other sub-surface defects mean the possibility of ruin to expensive engravers' tools.

Machinability is vital. Tubes that are out of balance are difficult to grind concentrically. While Pamarco dynamically balances every cylinder to insure trouble-free performance, the company says "we find Pittsburgh tubes require a minimum of balance correction."

• **Size tolerances** on tubes are another important factor. Oversized tubes require extra machining, which runs up costs. Undersize tubes may make it impossible to complete machining operations and hold to size.

If tubes are not straight, or have high or low spots, or if they belly in the middle, then it is necessary to buy tubing well oversize in order to clean up the surface to the required diameter.

Quality of the steel is demonstrated by the quality control checks made on tubes as they progress through the shop and in final inspection.

Pamarco uses a battery of high-powered optical mi-

(Advertisement)

Uniform concentricity and wall tolerances of Pittsburgh tubing pay off in machining 7¼-inch OD tube to 6.983 as it assumes proportions of printing roll.

Final check on ink transfer roll made from quality Pittsburgh seamless involves close inspection of design. Inspector at left checks overall design while partner uses gravurescope to check width and depth.

croscopes to check the engravings on steel cylinders. The depth of the engravings is checked, for example, on a 600-power gravure microscope. Concentricity and balance also come in for close examination to make sure they meet rigid standards.

Where quality of the steel is important and where good, dependable warehouse service is essential to manufacturing, the best team is the tube mills of Pittsburgh Steel and a responsible, quick-to-move warehouse.

If you have tubing problems that need good steel and good warehouse service, pick out the closest distributor to you from the list at the right and act now. Put in a telephone call and you've got real help on its way to you—fast!

Close contact between A. B. Murray salesman Jack Fischer (right) and veteran warehouse manager Frank Grippo, insures steady flow of Pittsburgh tubes to Pamarco's plant from racks at Murray's Elizabeth, N. J., warehouse.

Pittsburgh Seamless Distributors

Baker Steel & Tube Company
Los Angeles, California
Chicago Tube & Iron Company
Chicago, Illinois
The Cleveland Tool & Supply Co.
Cleveland, Ohio
Drummond McCall & Co., Ltd.
Montreal, Quebec, Canada
Edgcomb Steel Company
Philadelphia, Pennsylvania
Gilmore Steel & Supply Co.
San Francisco, California
Earle M. Jorgensen Co.
Mapes & Sprowl Steel Co.
Union, New Jersey
Metal Goods Corporation
St. Louis, Missouri
Miller Steel Company, Inc.
Hillside, New Jersey
A. B. Murray Co., Inc.
Elizabeth, New Jersey
C. A. Russell, Inc.
Houston, Texas
Ryerson, Joseph T. & Son, Inc.
Chicago, Illinois
Solar Steel Corporation
Cleveland, Ohio
Steel Sales Corporation
Chicago, Illinois
Tubular Sales
Detroit, Michigan
Ward Steel Co.
Boston, Massachusetts
Ward Steel Service Company
Dayton, Ohio

Pittsburgh Steel Company

Grant Building • Pittsburgh 30, Pennsylvania

District Sales Offices

Atlanta	Columbus	Detroit	New York	Tulsa
Chicago	Dallas	Houston	Philadelphia	Warren, Ohio
Cleveland	Dayton	Los Angeles	Pittsburgh	

(Advertisement)

Next month!

WE'LL BE MAKING AN IMPORTANT ANNOUNCEMENT OF INTEREST TO ALL STEEL MAKERS REGARDING

Lectromelt*

FURNACES AND EQUIPMENT

Users report they have stepped up production and reduced their costs with efficient, time-proven Lectromelt furnaces. For a copy of Catalog 9-A describing this equipment, write Lectromelt Furnace Division, McGraw-Edison Company, 323 32nd Street, Pittsburgh 30, Pennsylvania.

*Registered trademark

AN EXAMPLE OF ALCHEMY

Transmutation of machine chips (background to foreground) from base steel to pure profit

The chips in the foreground aren't really gold – but they are the next best thing if you do extensive machining on circular forgings. They're Hi-Qua-Led Steel*. They are also the same grade steel as the chips in the background – 4140. You can see the great difference, but let us tell you something about it, too.

An initial production run in a customer's plant – using a Fellows gear shaper – produced both sets of chips. The regular 4140 steel forging had a Bhn of 285; the 41L40 Hi-Qua-Led Steel forging in the same grade had a Bhn of 285 to 293. Here are the results:

	4140 Steel	41L40 Hi-Qua-Led Steel
Roughing cut	50-60 sfm 0.0145 feed 0.530 depth of cut	80-85 sfm 0.0176 feed 0.533-0.538 depth of cut
Finish cut	50-60 sfm 0.0145 feed 0.033 depth of cut	100 sfm 0.0176 feed 0.025-0.030 depth of cut
State of finish	regular	super-finished
Total machining time	3½ hr average per gear (excluding down time for tool breakage)	2 hr average per gear (no tool breakage)

Machining time saved: 1½ hours or 43 per cent per gear. The savings shown in this particular test are typical of Hi-Qua-Led's performance in many applications. Further, when you use Hi-Qua-Led circular forgings you do not sacrifice any regular steel quality. Hi-Qua-Led in any AISI grade has the same attributes as regular steel of the same grade.

Investigate the possibilities of Hi-Qua-Led Steel in circular forgings from 18- to 145-in. OD. ALCO specialists will visit your plant to help you save the most from its machining potentials. Contact your nearest ALCO sales office, or write Spring & Forge Division, Dept. OCF-3, P. O. Box 1065, Schenectady 1, N. Y. for brochures.

Trade-mark registration pending. Patent applied for on lead-addition method.

ALCO

ALCO PRODUCTS, INC.

NEW YORK

Sales Offices in Principal Cities

Locomotives • Diesel Engines • Nuclear Reactors • Springs • Steel Pipe • Forgings • Oil-Field Equipment

C-2 AS A ROLL GRINDER for straight, convex, or concaved rolls.

C-2 PLAIN for lowest cost traverse grinding.

C-2 AS A SEMIAUTOMATIC for effortless plunge grinding.

Heavy duty cost cutter —the big Norton C-2

The Big Norton C-2 Cylindrical Grinder removes stock like a steam shovel and handles as easy as your '57 car. It gives you the Norton "Touch of Gold" on massive grinding jobs — large motor and turbine shafts, lathe and drilling machine spindles, radial mill columns, boring bars and the like.

With smooth, abundant power and a rigidly-ribbed base, the C-2 handles work lengths to 240″ and diameters to 24″.

It cuts production costs because it sets up quickly and keeps downtime to a minimum.

You can have the C-2 in three arrangements — *plain, semi-automatic, or roll.*

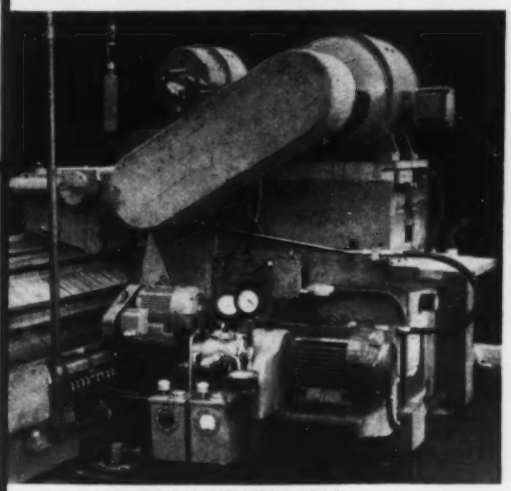
It is built in three swings of 14″, 18″ and 24″. The 14″, in lengths from 36″ to 168″. The 18″ and 24″, in lengths from 48″ to 240″.

If you use the C-2 semiautomatically, all your operator does is move a single lever for grinding repetitively to exact size and finish.

If you use the C-2 as a roll grinder, the Norton tilting wheel head crowning mechanism comes with it. This mechanism moves the grinding wheel contact point away from or toward the axis of the roll as the roll is moved past the wheel face and is cam and gear controlled to produce any crown desired.

Remember: only Norton offers you such long experience in both grinding machines and grinding wheels to help you produce more at lower cost. For further facts, see your Norton Representative, or write to NORTON COMPANY, Machine Division, Worcester 6, Mass. *In Canada:* J. H. Ryder Machinery Co., Ltd., Toronto 5.

C-2 SETS UP QUICKLY — All controls in front. No reaching by operator. Click count wheel feed index eliminates need for visual attention.



C-2 EASY TO MAINTAIN — Maintenance points on outside of base.

To Economize, Modernize with NEW

NORTON

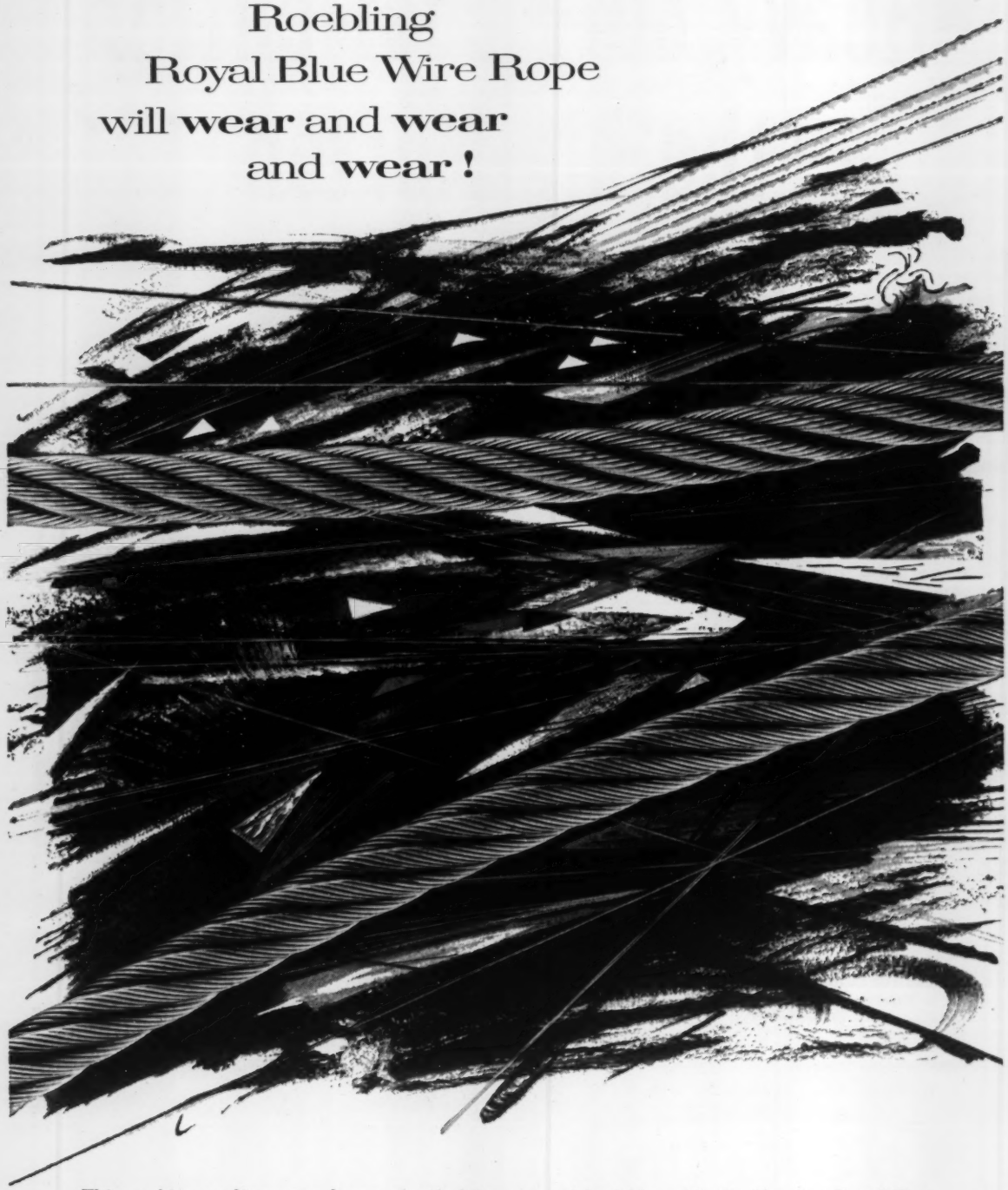
GRINDERS and LAPPERS

Making better products . . . to make your products better

District Offices: Worcester • Hartford • Cleveland • Chicago • Detroit
In Canada: J. H. Ryder Machinery Co., Ltd., Toronto 5

NORTON PRODUCTS: Abrasives • Grinding Wheels • Grinding Machines • Refractories
BEHR-MANNING PRODUCTS: Coated Abrasives • Sharpening Stones • Behr-cat Tapes

Roebling Royal Blue Wire Rope will **wear** and **wear** and **wear**!



This working quality means longer service life on *your* job. Add to this the fact that Royal Blue is stronger than the strongest rope you have been using and you have two excellent reasons why it has enjoyed faster acceptance than any wire rope in Roebling's history. Your distributor or Roebling Sales Office will give you the complete story, or contact John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

ROEBLING

Distributors, Branches and Warehouses Throughout the Country—Subsidiary of The Colorado Fuel and Iron Corporation

They cut out three oils by changing to one...

STANICUT Oil 166 BC

Screw machine plant saves on oil inventory and handling, receives other benefits by converting to dual-purpose cutting oil.

Standard Oil lubrication specialist Bob Cleland and plant manager I. G. Smallegan inspect machined piece. Giving technical help to customers like this is something for which Bob Cleland is well fitted. Bob has a mechanical engineering degree from Michigan State University and has completed the Standard Oil Company Sales Engineering School.

Grand Rapids Metal Products Company's problem was the mixing of cutting and lubricating oils in their National Acme and Gridley screw machines. In all, four oils were used. In some machines a cutting oil, two lubricating oils and a base oil were employed to improve machining characteristics. Lubricating oil leaking past seals mixed with the cutting oil, reducing cutting oil qualities. Oil mixtures were constantly varying, and troubles in tapping resulted.

Standard Oil's Bob Cleland, working with plant management, suggested STANICUT Oil 166 BC. This oil, he explained, is a dual-purpose oil. It can be used for lubrication as well as for cutting. In such applications, no dilution of the cutting oil can occur.

After a week's trial in one machine, the entire plant was converted to STANICUT Oil 166 BC. Tap troubles were reduced, resulting in much less down time. Spindle speeds have been increased, yet the spindles run cool. Four oils were formerly kept in stock. Now only one is needed.

STANICUT Oil 166 BC does not corrode bearings, gears, bushings, spindles or other machine parts. While the oil contains E.P. additives, it does not stain copper or brass.

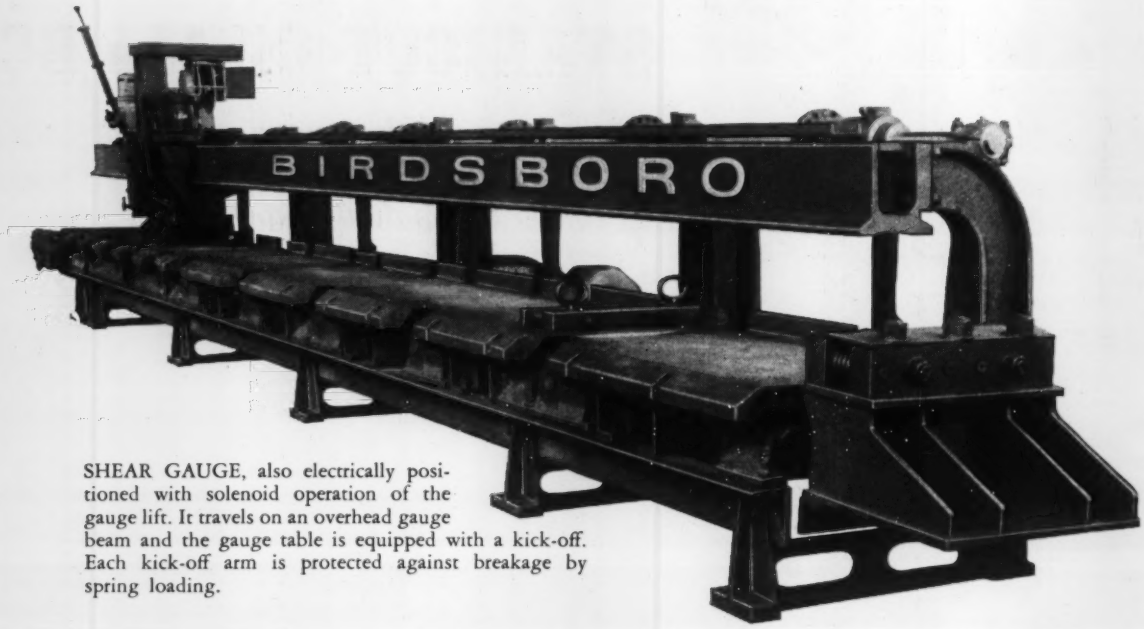
Get the facts on how STANICUT Oil 166 BC can help you. Call the Standard Oil office nearest you anywhere in 15 Midwest and Rocky Mountain states. Or write Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

Quick facts about
STANICUT OIL 166 BC

1	A dual-purpose oil — suitable for both cutting and lubrication.
2	Non-corrosive to work or machines.
3	Formulated with E.P. additives.
4	Stable under all normal conditions.
5	Non-irritating.
6	A cutting oil that permits high operating speeds.
7	Non-staining to either copper or brass.

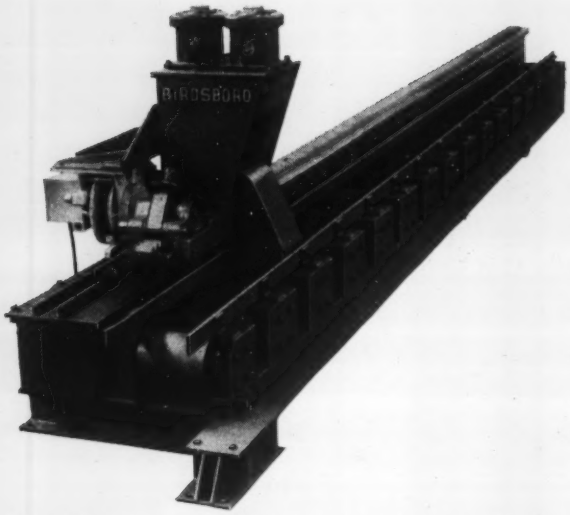
STANDARD

STANDARD OIL COMPANY
(Indiana)



SHEAR GAUGE, also electrically positioned with solenoid operation of the gauge lift. It travels on an overhead gauge beam and the gauge table is equipped with a kick-off. Each kick-off arm is protected against breakage by spring loading.

Saw Gauge, Shear Gauge – Combining BIRDSBORO and CUSTOMER Ideas



SAW GAUGE, electrically positioned with solenoid operation of the gauge lift. The unit travels on a low beam and rack on top of the table lineshaft girder. The gauge head is spring cushioned. It is manually locked after positioning. This design is relatively compact and simple, and is suitable for lower tonnage operations.

• The saw and shear gauges pictured here are designed to perform the same operation, each in a different manner. Each machine turned out by Birdsboro is the combined result of the ideas of the buyer and the ideas and design skills of the builder. For an exchange of ideas on your mill equipment problems, contact Birdsboro Steel Foundry and Machine Co., Birdsboro, Pa., District Office: Pittsburgh, Pa., Subsidiary: Engineering Supervision Co., 120 W. 42nd St., New York 36, N. Y.

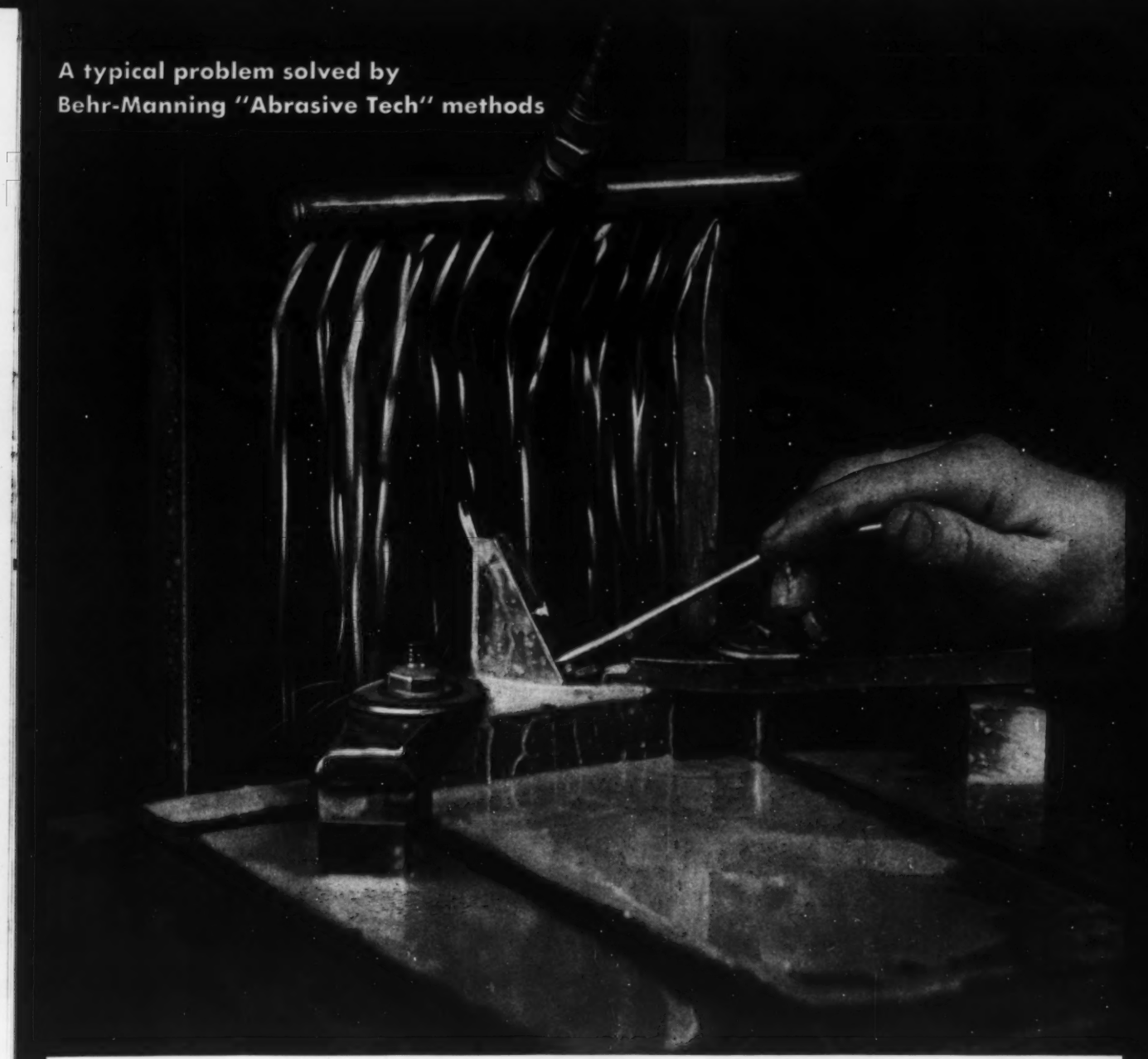
NM57-57

BIRDSBORO

STEEL FOUNDRY AND MACHINE CO.

STEEL MILL MACHINERY • HYDRAULIC PRESSES (Metalworking and Extrusion) • CRUSHING MACHINERY • SPECIAL MACHINERY • STEEL CASTINGS • "CAST-WELD" Design • ROLLS: Steel, Alloy Iron, Alloy Steel

A typical problem solved by
Behr-Manning "Abrasive Tech" methods



30 minutes were cut to 18 seconds when this vertical platen belt grinder replaced a lathe in shaping boroscope mirrors. Cut at an angle from round bar stock, they need to have their bottom angle shaped to match the top angle, an operation accomplished by placing them in a fixture and rotating them against a moving Speed-wet Durite belt. This "Abrasive Tech" method is an example of the Behr-Manning technical service that may provide more production efficiency for your plant.

A Behr-Manning methods engineer can often give valuable aid in overcoming stubborn finishing problems. All you have to do is call the nearest Behr-Manning office. Seventeen well-equipped "Abrasive Tech" Methods Rooms are waiting to show you the newest techniques: Atlanta, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Detroit, Grand Rapids, High Point, Indianapolis, Los Angeles, Teterboro, Camden, San Francisco, Seattle, St. Louis, and Brantford, Canada. Main office and plant: Troy, N. Y.
For export: Norton Behr-Manning Overseas, Inc., New Rochelle, N. Y., U.S.A.

BEHR-MANNING CO.

A DIVISION OF NORTON COMPANY

NORTON ABRASIVES

BEHR-MANNING PRODUCTS: Coated Abrasives • Sharpening Stones • Behr-cat Tapes
NORTON PRODUCTS: Abrasives • Grinding Wheels • Grinding Machines • Refractories

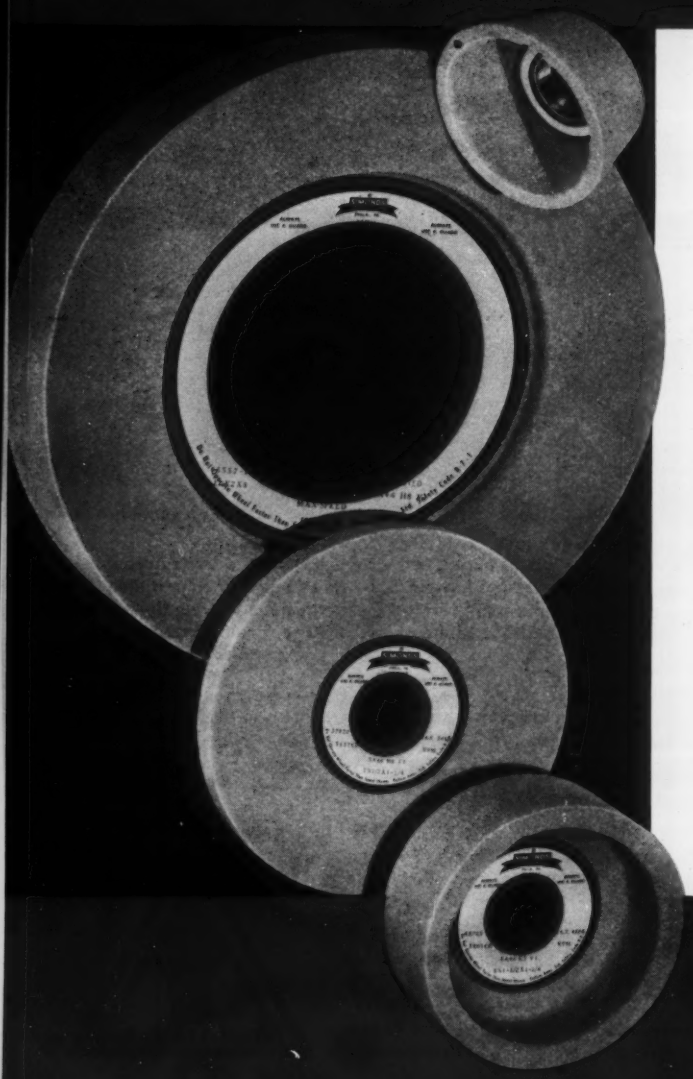
BEHR-MANNING®

Radically different

SIMONDS SA *Borolon*®

TRADE MARK

Grinding Wheels for toolroom use . . .



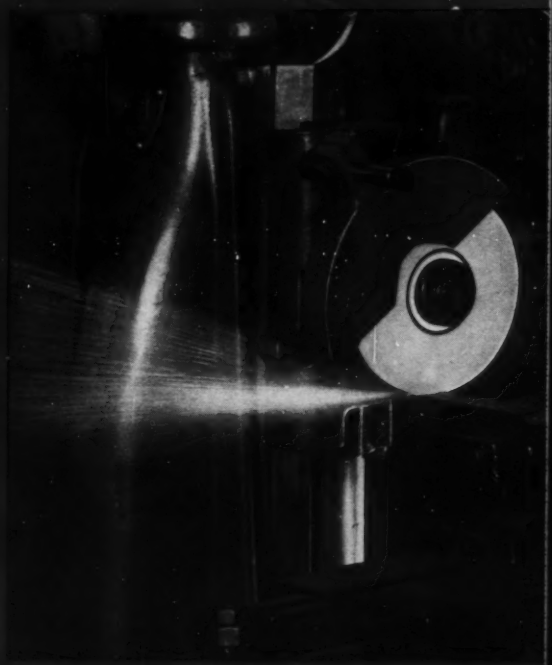
SA Borolon is a single crystal aluminum oxide abrasive possessing superior qualities over conventional white aluminum oxide abrasive. It is produced from a furnace charge consisting of a molten base with a soluble matrix which dissolves, leaving single natural crystals of abrasive grain *without crushing*.

Being single, natural crystals, each abrasive particle of SA Borolon is free of the inner stresses and strains to which multi-crystal, crushed abrasive is subjected under grinding pressures. Also, each abrasive particle contains more cutting edges, which permits greater penetration into the work and faster grinding. SA Borolon has the greatest surface hardness yet achieved with aluminum oxide type abrasives. Write for illustrated Catalog Bulletin ESA-272.

New and better

for tool and cutter grinding

SA Borolon®
TRADE MARK



COOLER GRINDING

Because of its tough, hard crystal structure, SA Borolon bites into the work, and fractures before point dulling can set up frictional drag, with consequent risk of damage to steel temper.

FASTER CUTTING

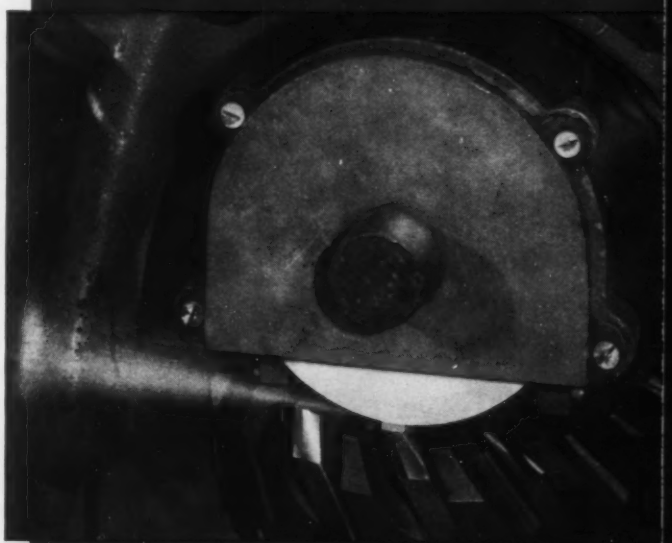
Because SA Borolon is made up of a single, unbroken crystal with multiple cutting faces, over its entire surface it provides a regular sequence of sharp edges on the wheel face. This differs radically from ordinary blocky grain in which blunt faces are interspersed with cutting edges.

LONGER LIFE

Because SA Borolon has (1) increased resistance to dulling and (2) fractures so as to increase the "self-sharpening" feature of the wheel, less dressing is required and wheel life is prolonged.

BETTER FINISH

The sharp, free, cool-cutting action inherent in the single crystal structure of SA Borolon, means improved finish on *your* toolroom grinding jobs.



SIMONDS ABRASIVE CO.

SIMONDS ABRASIVE COMPANY

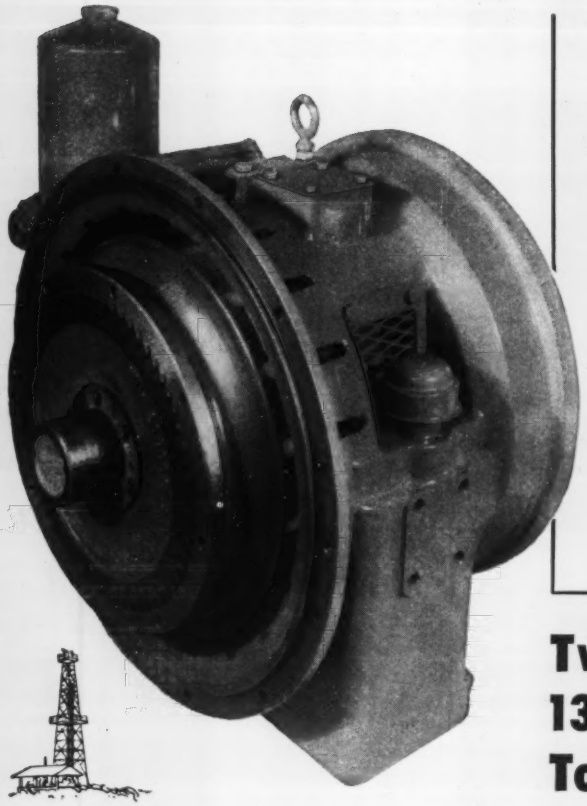
Tacony & Fraley Sts., Philadelphia 37, Pa.

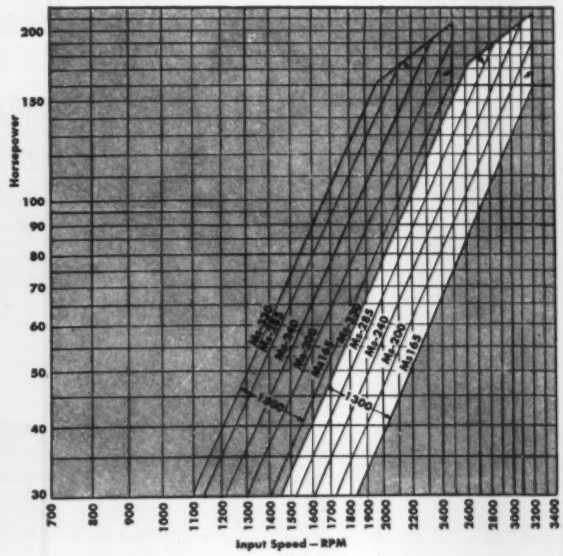
DIVISION OF SIMONDS SAW AND STEEL CO.

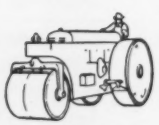
BRANCHES: PHILADELPHIA, CHICAGO, DETROIT, LOS ANGELES, SAN FRANCISCO, PORTLAND, ORE.

CALL **YOUR SIMONDS DISTRIBUTOR**

LOCAL STOCK FAST SERVICE







Twin Disc offers new 1300 Series Single-Stage Torque Converters

To meet the growing trend toward higher speed diesel and gasoline engines, Twin Disc Clutch Company announces its new 1300 Series Single-Stage Torque Converters . . . a series that offers ideal torque ratings for shovels, materials handling equipment, small industrial locomotives, front-end loaders, hoisting machinery, road rollers, graders and many similar applications.

The new 1300 Series Single-Stage Torque Converters are rated from 30 hp at 1450 rpm to 212 hp at 3200 rpm . . . with impellers available for specific torque ratings of 165, 200, 240, 285 and 330 pound-feet.

Current production of the 1300 Series consists of one model—the Model "F." This is a spacer-type arrangement with an SAE No. 2 flywheel housing size and either an SAE No. 2 or No. 3 output housing.

Like the Twin Disc 1500 Series Single-Stage units, the 1300 Series has an exclusive blade design which develops a counter-head at high-speed ratios, stopping fluid circulation. This simplifies design and construction and eliminates the need for a free-wheeled stator.

Impellers having different bladings (both number of blades and pitch) are interchangeable, permitting torque capacities to be matched more accurately to engines of various hp sizes and speeds.

The 1300 Series cooling requirements are minimized because of a rotating impeller housing which provides air circulation through the ventilated stationary housing.

If you've been considering a torque converter in your machinery designs, or are dissatisfied with your current single-stage units, investigate today the benefits offered by the new Twin Disc Single-Stage Torque Converters. Write for Bulletin 508 Supplement.

TWIN DISC

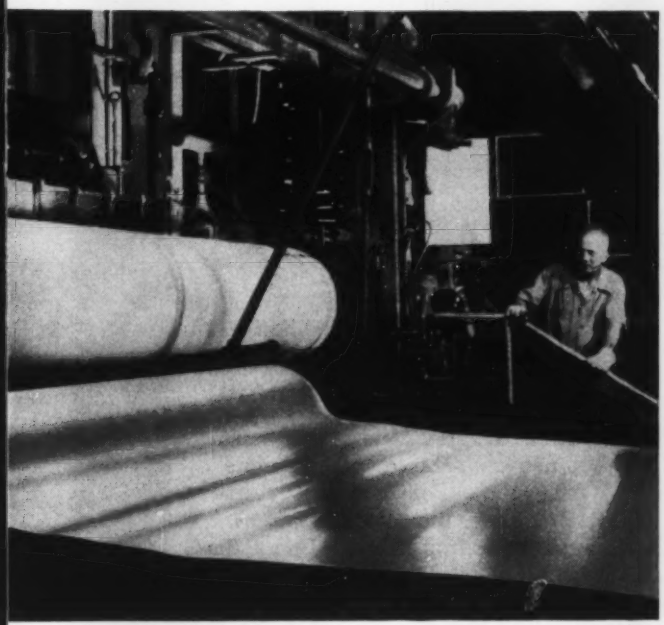
TWIN DISC
Torque Converters

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois

Branches or Sales Engineering Offices: Cleveland • Dallas • Detroit • Los Angeles • Newark • New Orleans • Tulsa

NOTHING *can equal Stainless Steel*

in its unique combination of properties



No other design material can match Stainless Steel in its combination of desirable properties: corrosion resistance, strength, hardness, beauty, cleanability and easy fabrication. If you're looking for a reliable source of supply, remember that United States Steel offers you the widest range of types, finishes and sizes.

UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • NATIONAL TUBE DIVISION, PITTSBURGH
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS STAINLESS STEEL

SHEETS • STRIP • PLATES • BARS • BILLETS
PIPE • TUBES • WIRE • SPECIAL SECTIONS

USS

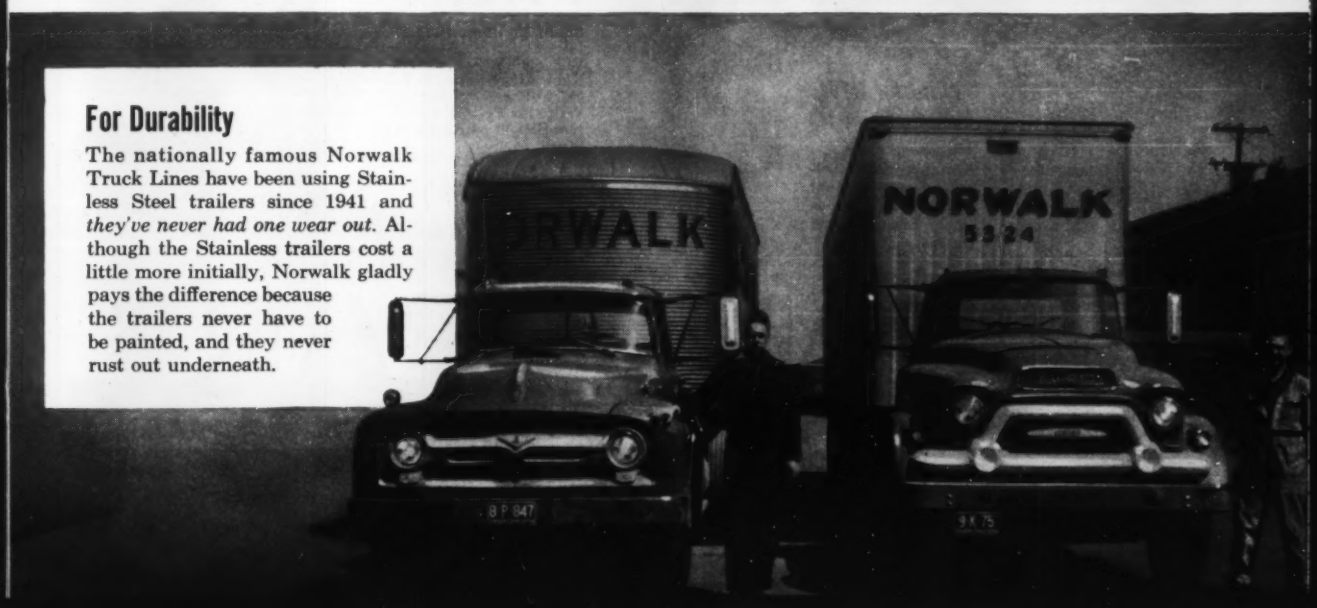
UNITED STATES STEEL

For Heat Resistance

Pittsburgh Plate Glass Company wanted to increase the output of their glass tanks, so they needed better rolls to withstand the heat from the 2000° F. glass. They chose USS Stainless Steel Forgings for this critical location because Stainless resists cracking and oxidation, and retains its dimensions, even though in 24-hour-a-day service.

For Corrosion Resistance

Calera Mining Co. operates the world's largest cobalt refinery, and the process involves leaching with a sulfuric acid solution. The Stainless Steel agitators shown here hold up at temperatures as high as 200° F., despite the high acid concentrations.



For Durability

The nationally famous Norwalk Truck Lines have been using Stainless Steel trailers since 1941 and *they've never had one wear out.* Although the Stainless trailers cost a little more initially, Norwalk gladly pays the difference because the trailers never have to be painted, and they never rust out underneath.

FUN! with Scott-Atwater's fleet of 9 new outboards

with help from SEWALL GEARS

Outboarding at its exciting best . . . with a model for every need from 3.6 h.p. to 40 h.p. . . . that's Scott-Atwater's new fleet with features such as . . . Raymond Loewy design . . . new color choice . . . "Aquamute" exhaust . . . "Bail-A-Matic" . . . and many others including *full gear shift* with help from Sewall Gears for rugged, dependable service.

Sewall's complete gear service can help you . . . *call us!*

Write for NEW Bulletin No. A-110

The Sewall Story . . . 4 pages richly illustrated with in-plant photos . . . includes listing of capacities and facilities.

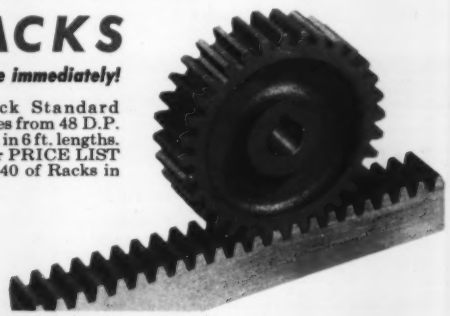
Sewall gears are made by men who are fussy about specifications. We work in strict accordance with your prints. Gears must be delivered as scheduled. Price must be reasonable. We maintain a wide range of late-model machine tools, inspection instruments and checking equipment to serve our customers across the nation.

Let us quote on *your* specifications!

RACKS

available immediately!

We stock Standard Rack sizes from 48 D.P. to 3 D.P. in 6 ft. lengths. Write for PRICE LIST No. SR540 of Racks in Stock.



SEWALL GEARS

E. B. SEWALL Manufacturing Company, 705 Raymond Avenue, St. Paul 14, Minn., Midway 5-7721

Are your Oil Seals burning up?

Oil seal failure often results from excessive heat . . . caused by friction plus high operating temperatures. New hi-temperature applications for both lubricating and Type-A transmission oils are putting the heat on seal manufacturers.

That's why IPC has custom compounded new BUNA-N seal materials especially for hi-temperature use. In many instances, IPC's BUNA-N Oil Seals are ideal for operating temperatures up to 325° F.

Naturally your specific application is the deciding factor. If you're interested in lower-cost oil seals for temperatures up to 325° F. be sure to check your specifications with IPC . . . the foremost custom compounders of packings — oil seals — precision molding.

BONDED BY IPC

1. Bonded Washer Seal Double Lip Wiper
2. Bonded Case Seal Double Lip Wiper
3. Bonded Washer Seal Straight Lip
4. Bonded Washer Seal Limited Contact Lip
5. Bonded Washer Seal Straight Lip With Garter Spring
6. Bonded Washer Seal Limited Contact Lip With Garter Spring
7. Bonded Case Seal Straight Lip
8. Bonded Case Seal Limited Contact Lip
9. Bonded Case Seal Straight Lip With Garter Spring
10. Bonded Case Seal Limited Contact Lip With Garter Spring
11. Bonded Case Seal Straight Lip Thin Rind Type
12. Bonded Case Seal Limited Contact Lip Thin Rind Type
13. Rubber Covered Bonded Case Seal Straight Lip
14. Rubber Covered Bonded Case Seal Limited Contact Lip
15. Rubber Covered Bonded Case Seal Straight Lip With Garter Spring
16. Rubber Covered Bonded Case Seal Limited Contact Lip With Garter Spring

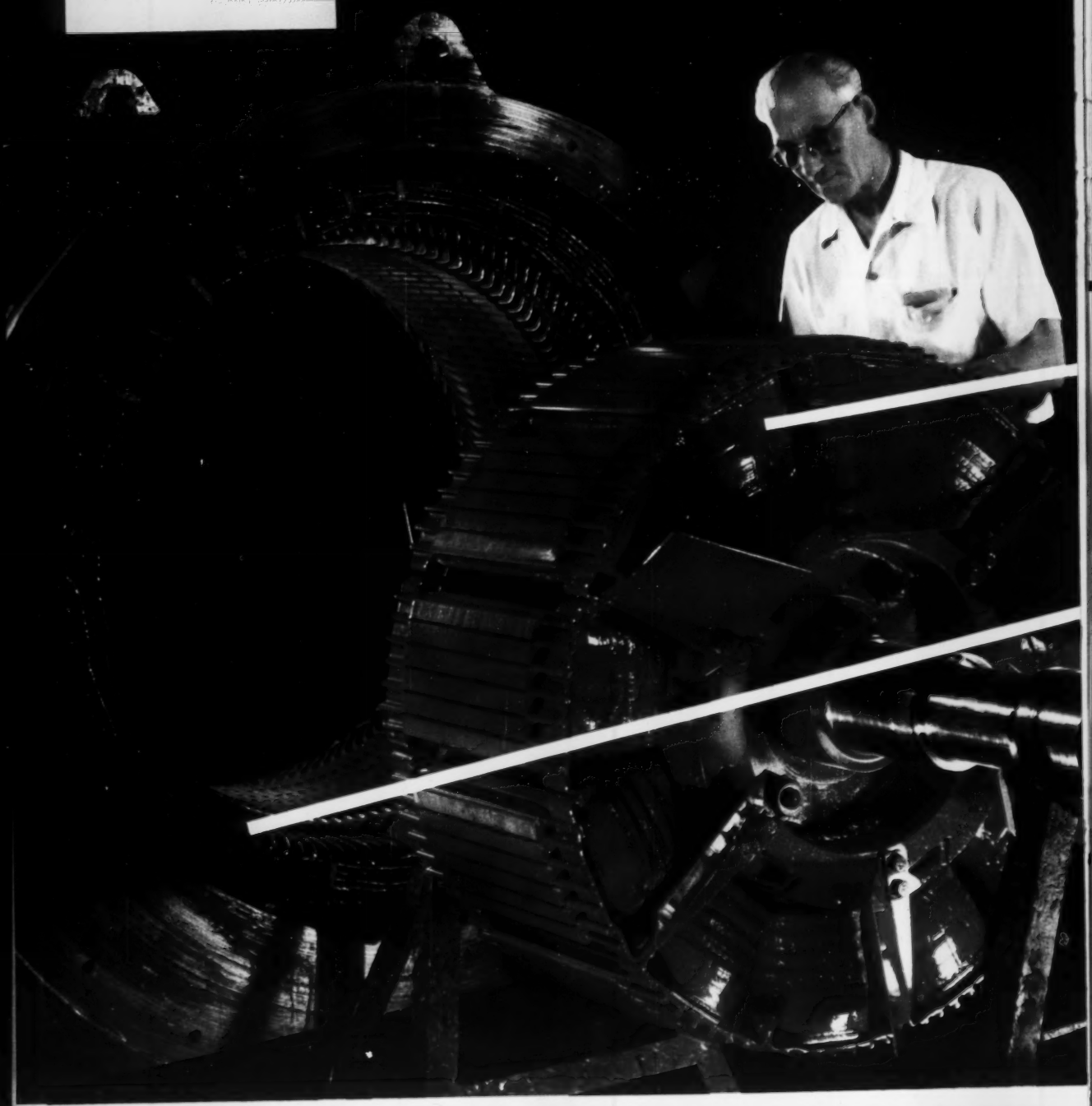
INTERNATIONAL PACKINGS CORPORATION

Bristol, New Hampshire

PACKINGS · OIL SEALS · PRECISION MOLDING

P2

ONLY Allis-Chalmers



ALLIS-

MOTORS are "double protected"

New Integrated Field Coils Plus *Silco-Flex* Stator Insulation Provide Superior Motor Protection... Under Any Operating Conditions

1

Integrated Field Coils are bonded in heat-stabilized resins, enclosed in a resin-impregnated sheath of oriented glass fibers and bond-locked on the pole structure . . . dimensionally stable to withstand heating and thermal shock, vibration and fatigue at elevated temperatures . . . sealed throughout against atmospheric contaminants and fully protected against destructive forces.

2

***Silco-Flex* Insulation** provides a homogeneous, void-free insulating wall of silicone rubber on stator coils. It is unexcelled in life and thermal stability at high temperatures . . . resistant to most chemicals, water, weather . . . outstanding in flexibility and resilience . . . able to withstand abrasion and corona . . . resistant to physical and mechanical forces.

Exclusive Allis-Chalmers "double protection" is available on large electrical machines with operating temperatures through Class B range.

Silco-Flex is an Allis-Chalmers trademark.

For more information on these quality insulation systems contact your nearby A-C office, or write Allis-Chalmers, Power Equipment Division, Milwaukee 1, Wisconsin for Integrated Field Coil Bulletin 05R8525 and *Silco-Flex* Insulation Bulletin 05R8341.

Allis-Chalmers "Double Protection" with integrated field coils and Silco-Flex stator coil insulation, adapts this 600-hp, 2300-volt, 600-rpm synchronous motor to the most severe operating conditions.

CHALMERS

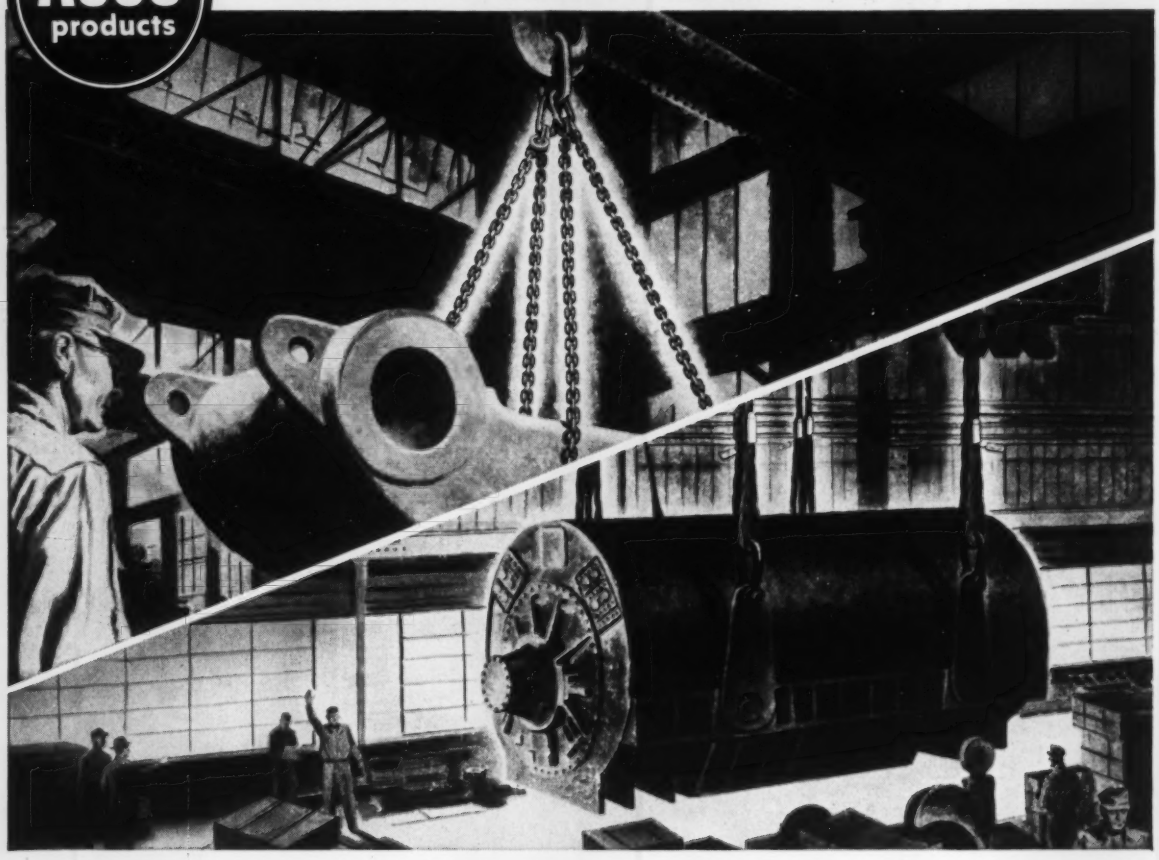
A-C ALLIS-CHALMERS

A-5221

ACCO products

Acco Registered* Slings–Wire Rope & Chain

THE STANDARD OF EFFICIENCY AND SAFETY



Why Acco *Registered* Slings are the Safest Slings Made

• Your job may demand Chain Slings, Wire Rope Slings—or a combination of both. Temperature, shape or weight of a load, protruding corners and many other factors tend to make one particular sling best for a particular application. But no matter what your requirements, ACCO has the right sling in its complete line of ACCO *Registered* Wire Rope & Chain Slings.

And with an ACCO *Registered* Sling you get the extra protection of the ACCO *Registered* program—extra safeguards which make ACCO *Registered* Slings the safest slings made.

Individually Proof-Tested • Each component of an ACCO *Registered* Sling is first tested to insure that it has strength at least equal to the sling body. All hooks for ACCO *Registered* Slings are Magnaflux tested. Then the slings are assembled according to carefully engineered designs which have proven their safety and effectiveness in extensive laboratory tests and field applications. The completed slings are then individually proof-tested at a load at least twice that for which the sling is rated.

Only after a sling has passed these rigorous tests is it registered. And this ACCO Registration is attested by a certificate and a ring or tag which are attached to the sling and accompany it to the user as his warranty of superior quality and safety.

New, Safer Master Link • Over the years ACCO has maintained a continuing research program to build more and more safety and quality into ACCO *Registered* Slings. The latest result of this research is a new and better master link for both chain and wire rope slings.

ACCO's engineers found that by shaping the master link in a particular fashion they could make it stand up under loads up to 18% greater than could standard round sections. You now get this new, stronger master link on all ACCO *Registered* Slings at no increase in price—together with the many other improvements developed by ACCO research over the years.

At Your Distributor • ACCO *Registered* Slings—Chain, Wire Rope or combination—are readily available from a distributor near you. Call him today for an extra bonus of safety in your lifting operations. If you don't know his name, write to our Bridgeport office.

*Trade Mark Registered

ACCO

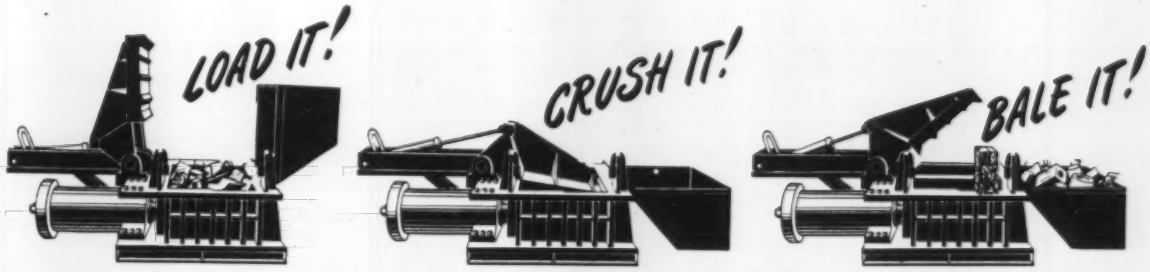
TRADE MARK

AMERICAN CHAIN & CABLE

BRIDGEPORT, CONN.

Atlanta, Boston, Chicago, Denver, Detroit, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, Portland, Ore., San Francisco, Wilkes-Barre, Pa., York, Pa.
In Canada: Dominion Chain Co., Ltd., Niagara Falls, Ont.

Better Value



We Build the Dempster-Balester to Load It, Crush It, Bale It— Bale After Bale After Bale

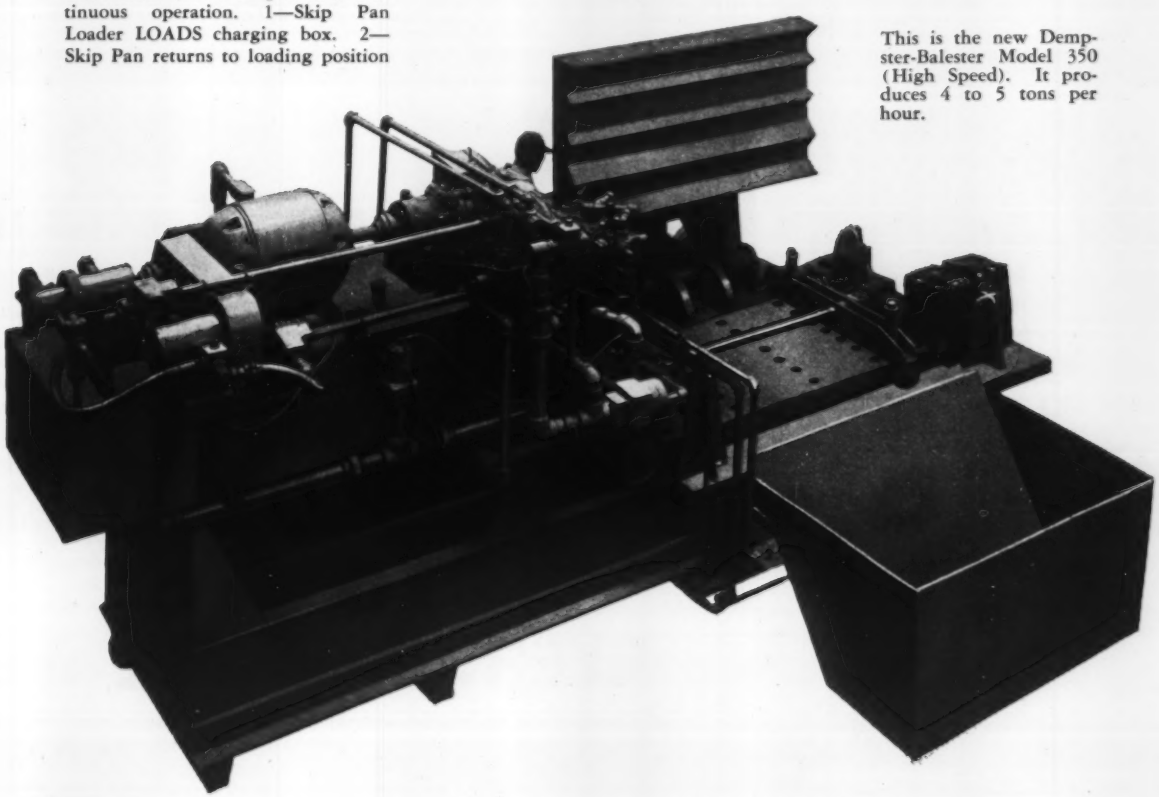
You not only get the nearest thing available to automatic baling when you buy a Dempster-Balester, but you get a press built to take the punishment of scrap metal baling consistently day-in and day-out . . . bale-after-bale-after-bale! The first Dempster-Balester was built in 1940 and it is still in operation. Today, hundreds of Dempster-Balesters are making money for men like yourself in over 200 cities in almost every state of the union, plus 15 foreign countries.

The Dempster-Balester's LOAD IT, CRUSH IT, BALE IT cycle (illustrated above) is a simple 1-2-3 continuous operation. 1—Skip Pan Loader LOADS charging box. 2—Skip Pan returns to loading position and Auxiliary Compression Door CRUSHES scrap with a 45-ton force. 3—As Compression Door returns to up-right position, charging box door closes . . . scrap is BALED and ejected. As each cycle ends another begins.

Without question, Dempster-Balesters are the fastest, most efficient presses baling scrap metal today! And you have six to choose from—three standard and three high speed models that turn out high density bales in capacities to meet any requirement from 1 to 9 tons per hour.

And don't overlook this important point. Before buying a baling press, it's important to know what kind of service you can expect. Certainly, no piece of heavy machinery can operate consistently without maintenance. Breakdowns cost money and when a part is needed for one of our presses, it is usually shipped the day your order is received. An ample stock of repair parts is constantly maintained to take care of you promptly! Write to us today for complete information.

A product of Dempster Brothers, Inc.



This is the new Dempster-Balester Model 350 (High Speed). It produces 4 to 5 tons per hour.

DEMPSTER BROTHERS, 637 Dempster Bldg., Knoxville 17, Tennessee

STAINLESS DIRECTORY

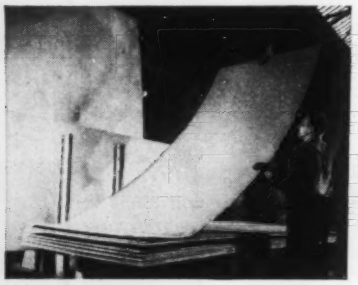
Buyers Guide to Ryerson Stainless Stocks & Services

Here's a quick guide to the nation's largest stocks of stainless steel—2,351 sizes, shapes, types and finishes of Allegheny stainless in stock at Ryerson.

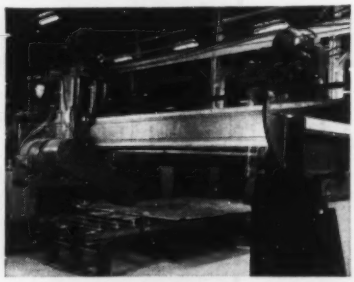
This wide selection assures you of getting the best stainless for every application. Extra care in storage, handling and shipping—such as padded shear clamps to protect finish and flatness of sheets—guards the high quality of Ryerson stainless stocks. And in addition, the help of full-time stainless specialists is yours when you call Ryerson.

See your Ryerson catalog for a complete listing of stocks and call your nearby Ryerson plant for quick shipment of Allegheny stainless—one piece or a truckload.

SHEETS—11 analyses of Allegheny stainless sheets in stock including nickel and straight chrome types. Also extra wide sheets to reduce welding costs.



PLATES—Available in 9 analyses including plates to Atomic Energy Commission requirements and to ASTM specifications for code work. Also extra low carbon types for trouble-free welding.



TRUE-SQUARE ABRASIVE CUTTING
Stainless plates up to 12′ x 25′ cut absolutely square on abrasive disc machine. Length and width tolerance plus or minus 1/32″.

A NEW STEEL—Type 202 Allegheny Stainless is available in 14 to 26 gauge sheets. Type 202 compares favorably with 302 in corrosion resistance; costs 2¼¢ per lb. less.

BARS AND ANGLES—Rounds, squares, flats, hex's and angles in 8 types including free-machining bars with both analysis and mechanical properties controlled for best performance.

CIRCLES, RINGS, SPECIAL SHAPES—Practically any shape, no matter how intricate, can be accurately flame cut from stainless steel plate by skilled Ryerson operators.

PIPE AND TUBING—Light wall, standard and extra heavy pipe, ornamental and regular stainless tubing. Also flanged, screwed, welding and Quikuple fittings and Cooper stainless valves.

AIRCRAFT STAINLESS—Sheets, strip, plate and bars to Government and Aeronautical Specs. Write for Ryerson Aircraft Steels booklet.

Principal products: Carbon, alloy and stainless stee's—bars, structurals, plates—sheets and strip, tubing, reinforcing products, industrial plastics, machinery and tools, etc.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS: NEW YORK • BOSTON • WALLINGFORD, CONN. PHILADELPHIA • CLEVELAND • CHARLOTTE • CINCINNATI • DETROIT • PITTSBURGH • BUFFALO CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

STEEL

March 25, 1957

Metalworking Outlook

Jitters Disappearing?

Business jitters are fading. Signs are appearing that steel demand will rise moderately (see page 145), that STEEL's industrial production index will remain on a high plateau (page 75). Scattered bellwether industries and companies report optimistic indications. Samples: January bookings of material handling equipment makers rose to 126.34, compared with December's 117.76, says the Material Handling Institute. Says Associated Spring Corp.: "Backlogs are satisfactory; 1957 should prove to be a good year." Despite tight money and increased competition, the Johns-Manville Corp. outlook for 1957 is good, states L. M. Cassidy, chairman of the maker of construction materials.

Dissenting Voice on Steel Expansion

In 1957, consumers will use 86 million tons of finished steel, predicts Herman B. Director Associates, Washington research firm. That will be 3 million tons more than in 1956 and will require production of 121 million tons of ingot. But the group is more pessimistic about the future. By 1960, shipments are forecast at 92 million tons, or 130 million tons of ingots. It claims expansion plans now contemplated would put ingot capacity at 146 million tons by 1960. If so, the industry would be operating at 89 per cent of capacity in that year.

Lukens Sets Sights on 1982

Steel industries of the world may nearly double their production capacity in the next 25 years, due in part to the demands of industries needing nuclear power. So predicts Lukens Steel Co., which believes 1982's world capacity will reach 625 million tons of ingots, compared with the current potential of 327 million annually. In that growth, the U.S. is expected to hold its place as the world's leading producer, with 40 per cent of 1982 capacity, which comes to 250 million tons.

Memo on Highways

In the eight months since the expanded highway construction program was started, $1.4 billion worth of work has been obligated. "On the interstate system, we have contracted for $441 million worth of construction involving 791 miles of highway," says Bertram D. Tallamy, federal highway administrator. The 41,000-mile system, to be completed in 13 years, will link 90 per cent of all principal U.S. cities. It includes only 1.2 per cent of all highway mileage in the country, but it will carry 20 per cent of all traffic.

Chrysler To Drive Rambler?

On the basis of experience, don't expect the Justice department to step into the rumored acquisition of American Motors Corp.'s automaking facilities by Chrysler Corp. Justice doesn't like increased concentration in the auto industry, but it looks at it differently from the way it does the

Technical Outlook—p. 99 Market Outlook—p. 145

proposed merger of Bethlehem Steel Corp. and Youngstown Sheet & Tube Co. (It hopes to prevent what it thinks could happen in steel. Concentration has already occurred in autos.) If the rumor is true, count on Louis E. Wolfson, AMC's largest stockholder, to have checked the deal out first. Note also that the acquisition may just get in under the wire before legislation is passed requiring firms to notify Justice of their intentions to merge.

Why Ford Launches Edsel

Ford Motor Co. is launching the Edsel to capture a larger share of the medium-priced auto market. Of all cars sold in 1956, 60 per cent were in that bracket. But Ford did only 17 per cent of its business in the price range.

Reynolds and Communications

Orders are being transmitted in facsimile form by Reynolds Metals Co. Based on a transmission principle similar to Wirephoto, the system employs Western Union machines to provide automatic two-way transmission of information in picture form. The system can send handwritten, typed or printed materials and can handle diagrams, maps, blueprints and tabulations. In the pilot stage, the system links New York, Boston, Hartford, Conn., and Newark, N.J.

Tungsten: On the Verge

The Atomic Energy Commission is reported to be requesting "huge uses of tungsten" as a radioactive shield. Two or three other government programs for tungsten research are going on—besides the development of high temperature resistant alloys at Wright Air Development Center, Dayton, O. Stockpiles of the metal, thought to be sufficient for five years, may run out sooner than that. Thinks John B. Liebert, special assistant to the assistant secretary of interior: "Tungsten is on the verge of an enormous expansion."

Pentagon Guessing Game

Washington's currently favorite guessing game: Who will succeed Defense Secretary Charles Wilson when he resigns? He's expected to stay on until this summer. Mr. Wilson favors Air Force Secretary Donald A. Quarles, but the White House has reservations. Other candidates: Neil H. McElroy, president of Proctor & Gamble; H. Lee White, New York lawyer and former assistant secretary of the Air Force.

Straws in the Wind

Look for 400 million pressure cans to be made in 1957, compared with 350 million in 1956 . . . Every year about one-fifth of the U.S. population changes residence . . . United Electrical Workers has lost two-thirds of its membership since 1954 when expelled from the CIO.

How Can Any Hack Saw Cut As Fast As a MARVEL?

GREATER EFFECTIVE FEED PRESSURE

MARVEL Series 6, 6A, 9 and 9A Hack Saws are capable of automatically applying *more than twice the feed pressure* required for most hack sawing jobs. This means that MARVEL Saws can utilize the full strength and heat resistance of the modern composite hack saw blade which is designed to cut most efficiently under heavier feed pressures. MARVEL Dual Power Feed forces the blade to cut as deeply as possible and **practical** on every stroke—to cut-off the work in the fewest possible strokes by automatically adjusting the feed pressure in relation to the changing work resistance.

MORE CUTTING STROKES PER MINUTE

MARVEL Reciprocating Crank Lever Action, providing quick return of the saw frame on the non-cutting stroke produces 33⅓% more *cutting strokes* per minute than ordinary saws *without increasing the peak blade velocity on the cutting stroke.* Result: faster cutting-off without damage to the blade.

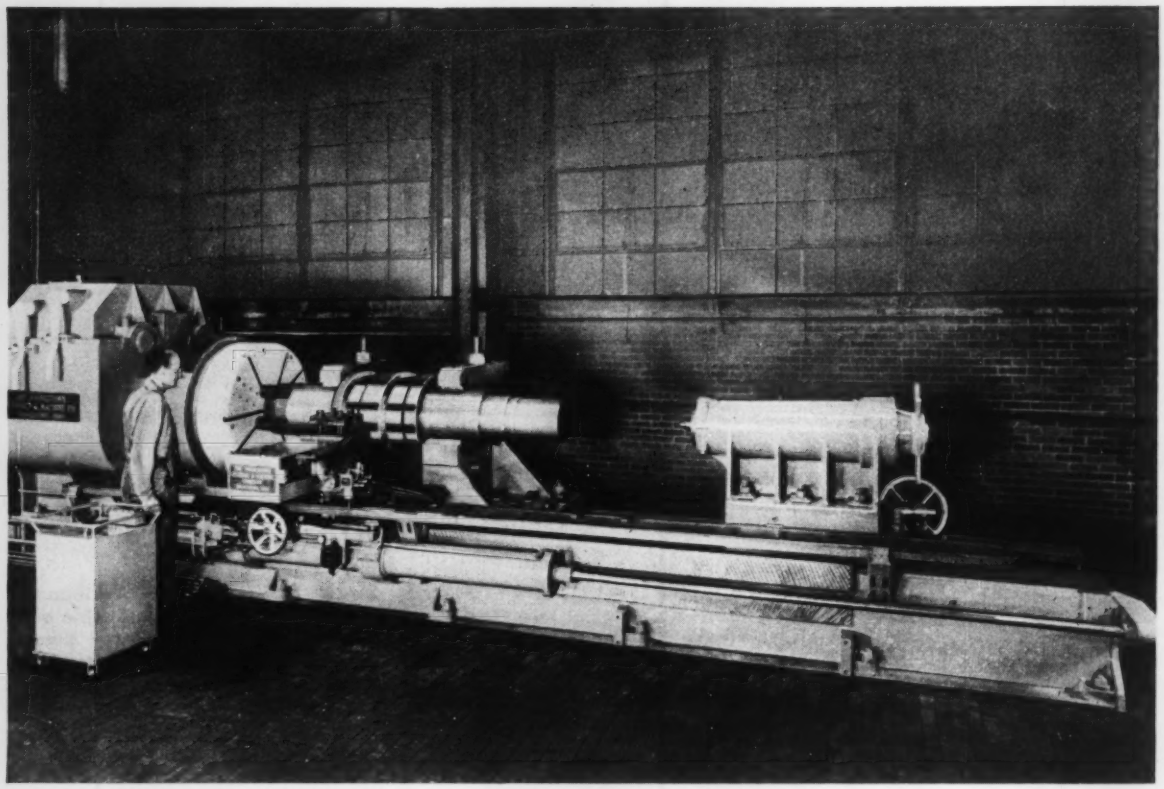
With far greater feed pressures automatically available, plus more cutting strokes per minute, is it any wonder that MARVEL Series 6 and 9 Hack Saws will give you faster, accurate cutting-off every time?

Write for the MARVEL Catalog and the complete story on MARVEL Metal Cutting Saws

ARMSTRONG-BLUM MFG. CO.
5700 BLOOMINGDALE AVE. • CHICAGO 39, ILLINOIS

S-1301

MARVEL *Metal Cutting* SAWS
Better Machines–Better Blades



New 36" contour roll lathe can turn parts on necks or centers . . . cut with single point carbide tools or with regular roll turning tools. Speeds range from .75 to 53.4 RPM. All heavy cast sections are ductile iron. Built by Youngstown Foundry and Machine Co., Youngstown, Ohio.

Ductile iron specified for heavy castings in new roll turning lathe

Today's machinist demands precision plus ruggedness in a roll turning lathe.

To meet these demands in its new 36" contour model, Youngstown Foundry and Machine turned to ductile cast iron for the lathe's four major castings.

For the face plate . . . ductile iron provided strength, toughness and wear resistance . . .

For the head stock . . . high strength along with good damping capacity . . .

For the tail stock . . . strength and toughness . . . a high modulus of elasticity . . .

For the carriage . . . high rigidity and strength.

Ductile cast iron provided these higher properties plus superior castability and machinability. That's because ductile iron combines certain advantages of steel and gray iron.

What about ductile cast iron for your application?

You may find ductile iron's combination of higher strength levels and good casting and machining characteristics will answer your design needs.

Why not find out how ductile cast iron can improve your product . . . save you production time and money.

Send for your copy of "Ductile Iron: The Cast Iron That Can Be Bent." It's packed with useful data.

ductile iron . . . the cast iron that can be twisted and bent

The INTERNATIONAL NICKEL COMPANY, Inc.
67 Wall Street, New York 5, N. Y.

Our Bulging Budget

Taxpaying time comes as a shocking reminder that 20 per cent of the national income is being swallowed up by federal tax collectors to meet the demands of an ever-bulging national budget. Another 5 per cent is taken by state and local collectors.

Not at all surprising is the pressure being exerted on Washington by business and individuals for a reduction in the federal budget as the only possible hope for tax relief.

Displeasure has been mounting ever since the President presented his record peacetime budget of $72 billion to Congress on Jan. 17. Sixty-three per cent of the total is earmarked for defense and collective security; 24 per cent for benefits at home; 10 per cent for interest on the public debt; 3 per cent for administration.

All these expenditures can be justified in principle. Weapons cost more. Nations in the Western orbit want more aid. Benefits to veterans are a fixed obligation. Interest on the debt is unavoidable. Expanding financial needs will go along with the growth of 4 million in population by 1958.

But strangely enough, while our national planners are permitting the budget to get bulgier, they are doing little to deflate it. Overlooked are the recommendations of the second Hoover commission that could save the nation's taxpayers an estimated $6 billion a year.

The 314 recommendations were contained in 20 reports presented to Congress from December, 1954, to June, 1955. They were developed by 150 outstanding business and professional men working as 13 task forces.

The investigations of these men into every phase of government activity brought to light a host of outmoded statutes, overlapping and duplicating services, obsolete buying practices and endless waste. They revealed, too, that the government engages in 1500 activities which are competitive with private business.

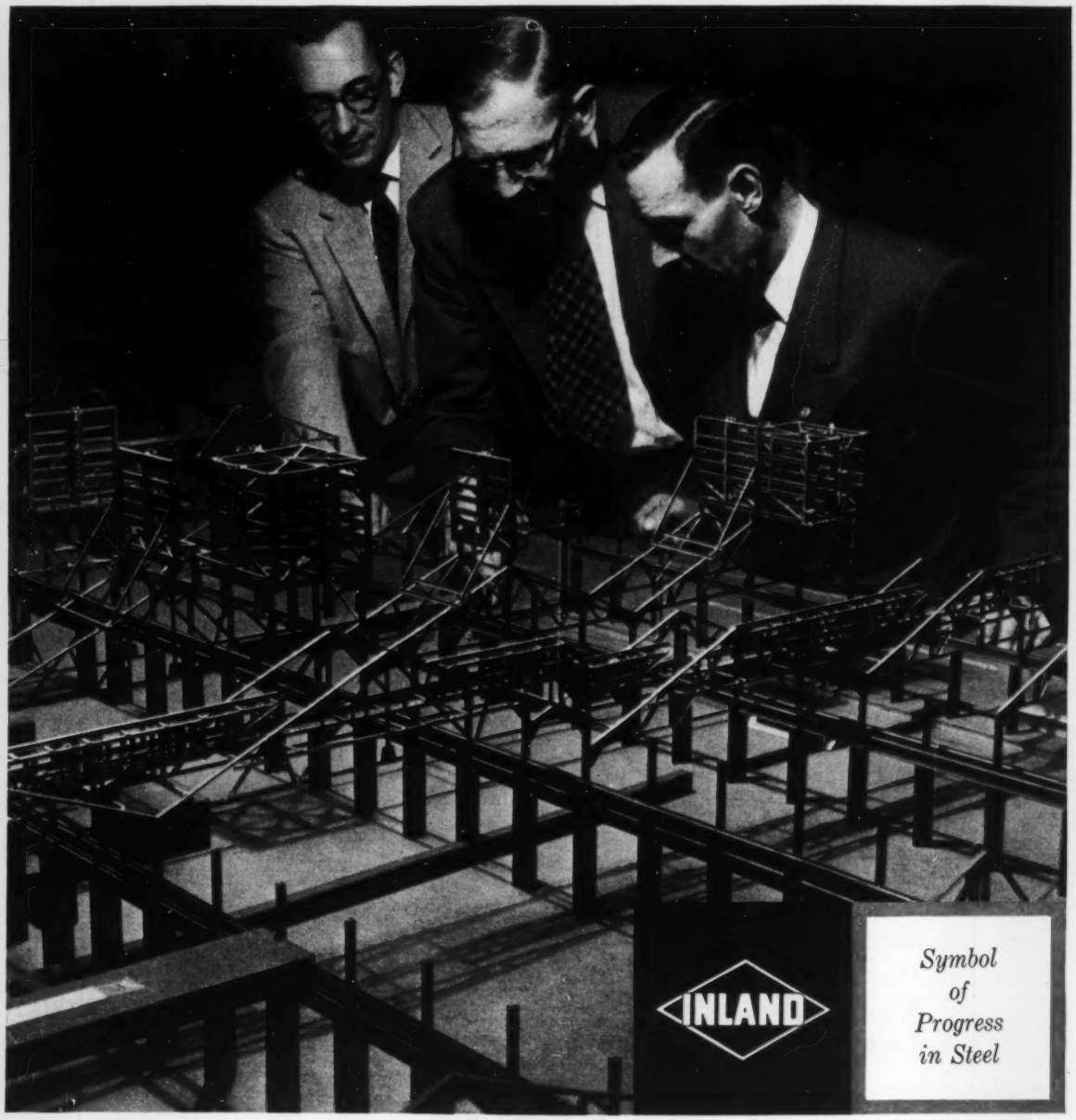
Action must come from these sources: 1. The powers granted the President under the Reorganization Act of 1949. 2. Administrative measures by various departments and agencies. 3. Congressional legislation.

If you are serious about the need for economy in government and lower taxes (and we think you should be), you can help. Wire or write Percival F. Brundage, Director of the Budget, Washington 25, D.C. He reports directly to the President. It would also be a good idea to contact your Congressmen.

Irwin H. Such
EDITOR-IN-CHIEF

$280,000,000 Erector Set

But these Inland planners are not playing! They're studying a construction problem on a scale model of the steelmaking facilities being built as part of Inland's present expansion program. They're concerned that every penny in this $280,000,000 project be invested wisely to make more and better steels for your growing needs. Included are provisions for new open hearth furnaces . . . new slabbing mill . . . new cold rolled sheet department . . . and other facilities across the continent. By 1959, this program will have increased Inland's ingot capacity by 15%—to 6.3 million tons. Inland plans ahead today for the steel you'll need tomorrow.



INLAND STEEL COMPANY • 38 South Dearborn Street • Chicago 3, Illinois

Sales Offices: Chicago • Milwaukee • St. Paul • Davenport • St. Louis • Kansas City • Indianapolis • Detroit • New York

McDonnell Aircraft Corp.

Latest defense order means two-way mobilization as . . .

Gray Reviews ODM Plans

FURTHER clarification of the new Defense Mobilization Order VII-U has come from the Office of Defense Mobilization and the Business & Defense Services Administration. (STEEL, Mar. 18, p. 48.)

New Chiefs—Gordon Gray, new defense mobilizer, and former assistant secretary of defense, says: "No abrupt or sharp reversal of Dr. Arthur S. Flemming's (former ODM chief) policies is indicated."

Wallace E. Carroll, new metalworking equipment division head, BDSA, reports: "We are thoroughly reviewing our activities." Criteria for review: The mobilization base will include facilities producing these defense items: 1. Products so urgent to defense they must continue to be turned out even when plants making the items are seriously damaged. 2. Long lead time products. 3. Products not generated in sufficient quantity in peacetime to meet wartime needs.

Significance—The comments of Messrs. Gray and Carroll meet the requirements laid down by the new defense mobilization order in this way: We are to prepare for a nuclear war, but we are to be ready for the World War II or Korean varieties also.

The new order emphasizes the possibility of devastating nuclear attack and does not spell out the continuation of past mobilization plans; but it seems that we are to move in both directions at the same time.

Trigger Tools — Neither BDSA nor ODM intends to forget the M-Day machine tool contracts. Mr. Carroll says 81 trigger contracts are completed or in the process of completion. They cover 15,500 general purpose machine tools.

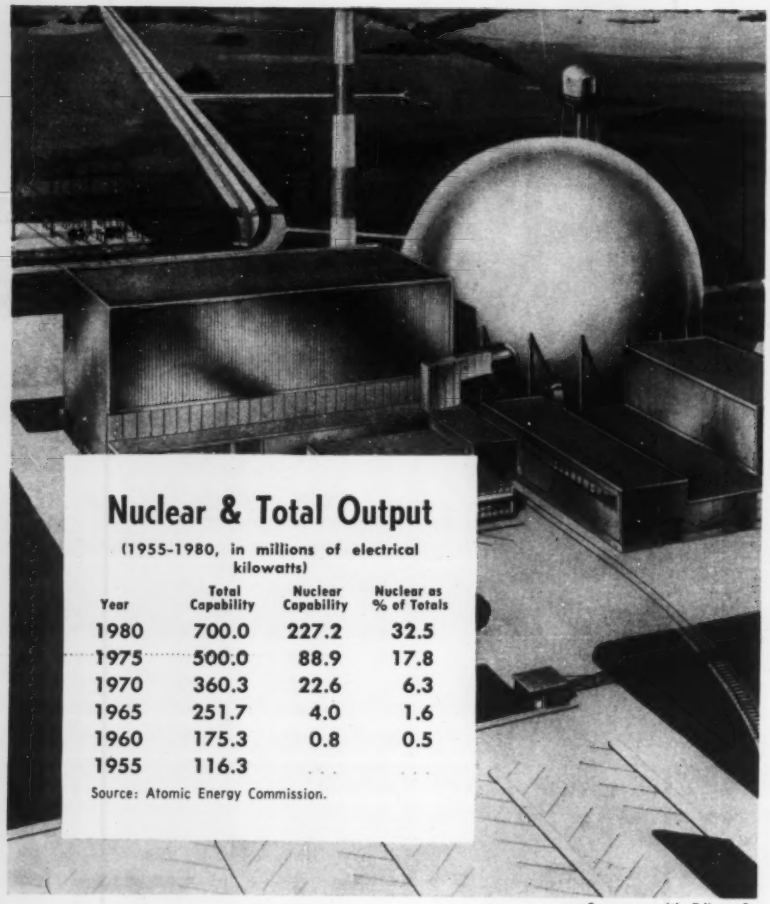
He adds that the elephant tool program will be stepped up as a result of the new ODM order.

Other BDSA moves include a survey of the tool and die industry (to be ready about June 30), a survey of the metal cutting tool industry (by the end of the year) and surveys of the rolling machine and equipment industry and the welding industry.

Defense — Emphasis on a quick war with no time for a long mobilization program is regarded by defense officials as simply recognition of the facts of life in this atomic era. In fact, one defense source indicates that the establishment of inventories of finished components at missile and atomic weapon assembly plants has been going on quite awhile. The same applies to stockpiles of spare parts for production equipment and alternate assembly lines.

Now the number of plants selected for this sort of treatment will be increased as funds are available from the three participating agencies, Defense, the Atomic Energy Commission and the Maritime Administration.

Conclusion—It must be pointed out that government officials have varying ideas on the extent of the shift that is taking place, their views depending on the department they represent.



Nuclear & Total Output

(1955-1980, in millions of electrical kilowatts)

Year	Total Capability	Nuclear Capability	Nuclear as % of Totals
1980	700.0	227.2	32.5
1975	500.0	88.9	17.8
1970	360.3	22.6	6.3
1965	251.7	4.0	1.6
1960	175.3	0.8	0.5
1955	116.3	. . .	. . .

Source: Atomic Energy Commission.

Commonwealth Edison Co.

Atomic Power To Increase

NUCLEAR POWERED electric generators will be producing nearly a third of the nation's electric power by 1980, predict two members of the Atomic Energy Commission. They add that the production cost will be competitive with that of conventionally fueled plants.

W. Kenneth Davis, director, and Louis H. Roddis Jr., deputy director, Division of Reactor Development, AEC, foresee a national potential of 700 million kw in the next 23 years. Nuclear powered plants will be capable of 227.2 million kw, or 32.5 per cent of the total.

Long Range — By 1960-1964, say the experts, nuclear plants now built, or being planned, will be through their initial shakedown runs and will be producing electricity at a cost of 10 to 13 mills per kilowatt-hour, compared with present costs of 4.5 to 9 mills in coal fired plants.

Initial capital cost of a nuclear plant today ranges from $300 to $400 per kilowatt of capacity, according to Mr. Davis and Mr. Roddis. A conventional plant can be erected for an outlay of $115 to $180 per kilowatt.

Experience—As nuclear powered plants are built and operated, improved techniques and materials will reduce these costs, believe the experts. Also, conventional fuels are expected to become more expensive.

In 25 years, the nuclear electric plant will produce at 6 or 7 mills per kilowatt-hour, they say, which should at that time be competitive with the production cost of conventionally fueled plants.

Plans—Within two years, ten experimental plants will be in operation producing an estimated 130,000 kilowatts, say the scientists. By 1964, 18 others, already planned, will be operating with a potential of 2 million kilowatts. Some plants will combine nuclear and conventional fuel.

Undoubtedly others will be built by the AEC and by private enterprise, say the AEC men. The technical knowledge gained will make possible the rapid expansion to the point forecast by 1980.

Urges Stepped-Up Program

Rep. Carl Durham (Dem., N. C.), chairman of the Joint Congressional Committee on Atomic Energy, told the National Industrial Conference Board that the U.S. should step up its atomic power program to insure world leadership. Durham urged:

1. Another plutonium reactor at Hanford, Wash. 2. A Mark I flying prototype of a nuclear propelled airplane. 3. More funds for AEC. 4. Reactor demonstration programs at home and abroad. 5. National indemnity legislation to cover injuries sustained in work with reactors.

ODM Certifies Tax Write-Offs

Certificates of necessity for accelerated tax amortization on 26 new or expanded facilities worth $127,055,637 were issued by the Office of Defense Mobilization in the two-week period from Feb. 21 through Mar. 6.

Five certificates are for facilities involving small business. Their estimated cost is $739,153. ODM gives special consideration to such projects to encourage small defense plant expansion.

To date, accelerated tax amortization amounting to $37,413,121,000 has been granted for 21,779 new or expanded plants.

RCA workers doing intricate assembly follow the leader on television as . . .

Closed Circuit TV Expands

MOST makers of closed circuit television systems (industrial TV) feel that industry sales will double this year.

Reports W. M. Jones, manager, electronics division, Thompson Products Inc., Cleveland: "Our Dage Division will increase its sales substantially during 1957."

Frank P. Barnes, marketing manager, industrial television, General Electric Co., Syracuse, N. Y., adds: "Possibilities for industrial TV are limited only by our imagination . . . we have just scratched the surface." GE's estimate of the market: Industry sales are in the $6 million-a-year category now, will roar to $75 million annually within ten years.

ITV Ingredients—A camera, coaxial cable, monitor and some special lighting comprise a simple system. The cost can be as low as $1200. Basic components can be expanded into multiple unit installations which take power cabinets and related special equipment. Such complex systems call for expenditures up to $30,000—sometimes more.

ITV got its start in government laboratories where it was used in the handling of radioactive materials. It's now being used for a number of jobs.

Radio Corp. of America, New York, is using its equipment to help workers assemble complex components. A specialist does the operation under an overhead camera which transmits the picture to monitors (or TV receivers) mounted above assembly benches. Workers duplicate the steps observed, are given additional advice via a sound system.

Plant Protection—Graybar Electric Co., Cleveland, distributor of ITV assemblies, feels that plant protection and guard systems can be simplified with ITV. Examples: 1. A camera, with a sweep of 359 degrees, can be placed on a platform above the plant roof. It surveys the ground around the entire facility and passes this picture to a monitor unit inside the building. 2. Within the plant, one guard can watch several doors. As personnel face the camera, the guard can check identification badges, then press a button releasing the lock. This use is growing in companies which have government contracts and must block off classified areas within a building.

ITV is also on the production line. Weirton Steel Co., Weirton, W. Va., division of National Steel Corp., provides operators with remote observation of in-transit steel slabs that are being dispatched on roller tables from the roughing to the finishing department. Operations are up to 350 ft away.

Standards—Most industrial producers have adopted the standards set up for commercial television by the Federal Communications

ITV is finding expanding uses in:

(Partial List)

- Plant grounds surveillance.
- Bulk loading scrap metals.
- Atomic process control.
- Checking warehouse stock.
- Assembly line control.
- Wind tunnel testing.
- Document transmission between plants.
- Pipe and cable inspection.
- Observing furnace interiors.
- Dial watchers for boilers, milling machines.
- Plant guard systems.
- Deactivation of ammunition.
- Metal pouring operation.
- Control of reheating and processing operations.
- Freight yard control.
- Jet engine test-stand observation.
- Sales and instructional presentations.

Commission. "This," reports one maker, "has helped the entire industry as competitive monitors, cameras and related equipment can be used interchangeably in most cases."

Problem—Maintenance is still an industry headache. Industrial units are more troublefree than the intricate studio types, but local servicemen are needed.

The Dage Division has a training course for customers who purchase average or small installations. For an unusually large installation (Dage installed 105 of its cameras and 100 monitors in the Pennsylvania Railroad's New York station), it supplies a full-time maintenance specialist.

RCA has established a subsidiary organization to handle maintenance (RCA Service Co.). General Electric is going after independents. It says: "The service stations range from large incorporated businesses to one-man organizations. They need equipment similar to that used for servicing two-way radio units and/or serving and maintaining a television station."

Outlook Dim for Scrap Men

Nonferrous dealers are in low spirits as domestic market continues downward trend. Consumers buy primary metal; smelters buy little scrap. Export market beckons

CONFRONTED by shrinking markets and sagging prices, nonferrous scrap dealers think little immediate relief is in sight.

When members of the National Association of Waste Material Dealers Inc. gathered in Chicago for their annual meeting, they were told that increased industrial production has not been followed by similar increases for secondary metal. A gain of 30 per cent has been reported for primary metal in recent years, while consumption of secondary metal has gained only 17 per cent. The fact that consumers are tied to long-term contracts for virgin metal, of which they have ample stocks, accounts in part for this deficiency.

Commenting on the depressed market for copper scrap, George Adams, Southern Scrap Material Ltd., New Orleans, expressed the view that the red metal is suffering from competition with aluminum. He cited several cases where manufactured goods formerly made of copper are being fabricated from aluminum.

Catches Up—In his appraisal of the aluminum market, Sam Barnett, Sam A. Barnett Metal Co. Inc., Akron, declared that this metal has caught up with demand and is looking for new markets. Consumers appear to be withholding their scrap from the market and waiting for better prices.

William Wilkoff, S. Wilkoff & Sons Co., Cleveland, pointed out that lack of quality control had cost scrap dealers the opportunity of selling direct to foundries. They must now sell to smelters, and sales to this group are limited now because of slack operations in brass mills.

Bright Spot — One encouraging development was noted: The government recently lifted restrictions on exports of copper and copper alloy scrap and raised export quotas on aluminum scrap for the second and third quarters. Exports can provide a market for the scrap which previously went into secondary ingots for domestic use.

Trade in Nonferrous Scrap

	IMPORTS		EXPORTS	
	1956	1955	1956	1955
	Net tons		Net tons	
ALUMINUM	25,992	40,780	19,329	18,300
COPPER	5,410	24,580	25,680	76,100
LEAD	20,476	18,900	2,136	2,990
ZINC	185	280	12,693	21,610

Fight UAW Tie-Up

Minneapolis-Honeywell engineers balk as UAW seeks major toehold in white-collar field

UNITED AUTO WORKERS will almost certainly face a decertification test for the right to represent engineers and technicians at Minneapolis-Honeywell Regulator Co., Minneapolis.

Dissenting members of the

Federation of Honeywell Engineers, which voted to affiliate with the UAW on Feb. 25, have filed with the National Labor Relations Board for a representation election. So has the company. The NLRB held conferences last week to determine if an agreement could be worked out on how the election should be held.

Key—The method of conducting the elections is an important one to watch. Dissenting engineers want separate elections—one for engineers, one for technicians. The UAW is pushing for a combined election.

Here's the point. Until now all organizing of engineers has included both engineers and technicians. A precedent would be set if the NLRB decides engineers and technicians are two individual bargaining units. Reason: If engineers vote no, technicians could still vote yes and be incorporated into the union. While this might not work to the UAW's advantage in this instance, in future negotiations it would give unions a double-entry wedge for its organizing activities—they could tackle the engineers and technicians as a combined group or as two separate units.

Minneapolis-Honeywell officials report that the group breakdown is about 1500 engineers and 800 technicians. Membership in the FHE, which before joining the UAW was affiliated with the Engineers & Scientists of America, included both engineers and technicians. Actual membership was about 1000 of the total 2300.

Contract—The dissenting engineers have given formal notice to the company not to recognize the UAW because of its "questionable representation." Compounding the company's headaches is the FHE contract which expires May 1.

If the conferences produce no agreement on an election, the NLRB will probably schedule a public hearing, then make its own decision on how and if an election should be held.

Radio Firm Expands

A $1-million plant with 80,000 sq ft of space will be built by General Radio Co. at West Concord, Mass.

Use Your Trade Association

A gold mine of information, too often untouched, awaits you. Some 450 groups serve metalworking, offering services ranging from marketing research to technical advice. Small business, particularly, can benefit from joint efforts that individual firms could not afford

Metalworking's Association Record

	All National Associations	Metalworking Associations*	Business Population
1957	1700	450	4.3 million
1950	1500	400	4 million
1930	900	180	3 million

*Estimated by STEEL. Other figures, Commerce department.

To get more from your trade association:

1. **Learn its functions.**
2. **Attend national and regional meetings.**
3. **Introduce junior members of your firm to association activities.**
4. **Study its publications.**
5. **Assign one man responsibility for your company-association relations.**
6. **See that your company is well represented on association committees.**
7. **Be generous in financial support.**
8. **Go to your association for help when it's needed.**

Source: J. Gordon Dakins, executive vice president and treasurer, National Retail Dry Goods Association.

Here are the 11 top activities of trade associations:

Conventions and meetings
Publications
Government relations
Publicity
Statistics
Legal services
Education
Public service
Business standards
Advertising
Employer-employee relations

Source: U.S. Chamber of Commerce.

Used Machine Tool Outlook
For dealers: Stepped-up inquiry activity.
For buyers: Late models in short supply. Good 10 to 15 year old equipment available.
For new equipment buyers: Good market for your used machines.

Simmons Machine Tool Co.

Used Machine Tools Sell

OPTIMISTIC in attitude, but still waiting for order book action to back it up.

That's the best way to describe the used machine tool industry. Dealer sales in 1956 were 20 per cent ahead of 1955's — reason enough for the optimism, but sales since mid-November have been dropping off steadily.

One bright spot is inquiries. Three-fourths of the dealers contacted by STEEL report a definite increase over the last three weeks. "If half these inquiries convert to sales," says a Chicago dealer, "we'll be off and rolling toward another big year."

Late Models—One of the anomalies is the big demand for late model machine tools which the dealers can't fill. Prospective buyers want such things as lathes, shapers, big boring mills, planers, milling machines, grinders and shears. Says an official of Lang Machinery Co., Pittsburgh: "There is as much competition in finding good, late-model used machinery as there is in selling it."

Government and public auctions point up the situation. Late model used equipment often brings as much as it does new. "We can't get those high prices ourselves," says M. D. Galbreath of Galbreath Machinery Co., Pittsburgh.

Rebuilding — Higher prices and delivery dates on elephant type tools are stimulating the machine tool rebuilding business, says C. A. Simmons, chairman of Simmons Machine Tool Co. Inc., Albany, N. Y. He looks for business this year to top 1956's. The situation also tends to keep prices firm—International Machinery Co., Detroit, reported a recent sale of a rebuilt horizontal boring mill of 1936 vintage for $65,000.

As a buyer in the market for used machine tools, you can expect to find a fair supply of good equipment built in the World War II years and lots of prewar equipment available at attractive prices.

Areawise, Detroit dealers seem to be suffering the most; Cleveland has the brightest prospects. Ohio Crane Co., Cleveland crane rebuilder, says 1957 is running much better than 1956; Elmer W. Pfeil Inc., Cleveland, reported 1956 sales 30 to 40 per cent above 1955's and looks for the first half of 1957 to be even better.

Advantages—The optimistic hue of the used machine tool picture has advantages for you as a new equipment buyer, particularly if your postwar machine has been obsoleted by new equipment that you'd like to get. H. C. Robson, assistant to the vice president of manufacturing at Link-Belt Co., Chicago, says: "We recently found it to our advantage to sell a piece of equipment only three years old and replace it with a new model to improve productivity. The used machine brought a good price; the new machine helped us cut costs."

The one big exception to this late-model picture is in single-purpose special machines often set up for automation. Even though they're relatively new, they are tough to sell and won't bring you much on the used market. A Chicago dealer cites: "I bought on bid a special purpose machine from General Electric Co. for little more than its scrap value. It was only a few years old and sold for $60,000 new. It took several months, but I found a buyer—in Italy."

Fast Write-Off?—One thing the

used machine tool dealers would like to see, says C. M. Kempler, vice president of Interstate Machinery Co. Inc., Chicago, is an amendment to the fast tax amortization law to provide used equipment buyers the same opportunities as buyers of new machines. Currently, only new equipment can be amortized under the new tax depreciation provisions.

You can expect the Machinery Dealers National Association to be loading its political guns for such an amendment at its annual meeting in May. Sen. John M. Sparkman (Dem., Ala.) has already introduced such a bill. Rep. William S. Hill (Rep., Colo.) has included such a provision in his bill designed for special help to small business.

Sales figures of used machine tools have not been available, but the MDNA has been trying since 1950 to develop accurate statistics. It expects to get approval at the May meeting to set up a sales index with 1947-49 as the base year.

Because used machine tool business is generally an "order today, deliver tomorrow" type of operation, the index may be a good barometer of short term industrial business activity.

1956 Mergers Total 905

After hitting a 25-year peak of 846 in 1955, mergers reached a new mark of 905 in 1956, the Federal Trade Commission reports, but such ventures among mining and manufacturing firms dropped from 689 in 1955 to 638 last year.

Mergers in mining and metalworking numbered 359 in 1956, the FTC report states.

Breakdown: Mining, 43; primary metals, 29; fabricated metals, 55; nonelectrical machinery, 100; electrical machinery, 70; transportation equipment, 30; professional and scientific instruments, 11; miscellaneous manufacturing, 21.

$50 Million for Phones

Western Electric Co., New York, will build a $50-million factory at Columbus, O., to make telephone equipment. It will employ about 4000.

U.S.S. Cites Tax Pains

Low depreciation allowance complicated by rising cost of equipment, construction

TWO MAJOR economic forces, besides spiraling labor costs, complicate steel's desire to hold down inflation: 1. The rise in construction costs for expansion. 2. An inadequate tax depreciation formula.

Both management problems were emphasized in U.S. Steel Corp.'s 1956 annual report.

Soar—From 1945 through 1956, the corporation's capital expenditures totaled $3 billion. But if construction costs had held steady at the 1945 figure, total outlay would have been only $1.7 billion. The additional $1.3 billion (about a 75 per cent increase) represents extra dollars but not more facilities.

Depreciation — Aggravating the problem of finding additional dollars for expansion is the inadequacy of the federal income tax formula for depreciation. It limits depreciation recoverable during the life of a facility to the number of dollars spent for it originally. The only real basis of recovering purchasing power would be to adjust for the change in the dollar intervening between the year of capital expenditure and the year in which depreciation is taken, U.S. Steel maintains.

In every year since 1939, depreciation allowances failed to equal buying power, the corporation says. Its 17-year aggregate deficiency is $904 million. Depreciation recorded for 1956 hit $278 million, or $67 million short of the $345 million needed for buying power recovery.

Joint Deal on Missouri Ore

St. Joseph Lead Co., New York, is considering a proposal from Bethlehem Steel Corp., Bethlehem, Pa., for joint development of iron ore deposits near Bonne Terre, Mo., on property owned by St. Joseph.

Andrew Fletcher, president of the lead company, revealed in a letter to stockholders that Bethlehem had proposed a 50-50 exploitation of the area. Ore was discovered on it in 1951.

"We are actively studying this interesting proposal on the basis of an annual output of 2 million tons," said Mr. Fletcher's letter.

A five-year construction program would be necessary before any production of ore, officials said. Mr. Fletcher advised his stockholders that his firm would operate the mine, under the proposal, while Bethlehem would provide major financing, techniques of ore beneficiation and provide a market for the product.

Thompson Plans 14 Buildings

Thompson Products Inc., Cleveland, has started construction on a plant at Martinsville, Va. Eventually, 14 buildings costing $10 million are to be constructed there.

Enters Fluorocarbons Field

Carbide & Carbon Chemicals Corp., a division of Union Carbide & Carbon Corp., New York, will build a plant to produce 50 million lb of fluorocarbons a year. The production unit will be erected at the company's Institute, W. Va., plant and is expected to be in operation by the last half of 1958.

Eastman Kodak Expands

A record $60 million will be spent on plant improvements and additions this year by Eastman Kodak Co., Rochester, N. Y.

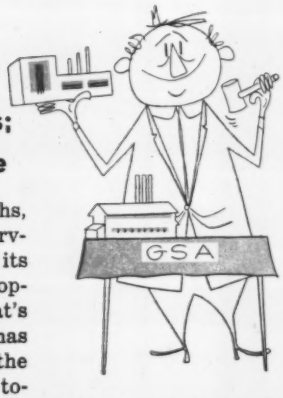
Cutler-Hammer Builds

A $4-million manufacturing plant will be built at Lincoln, Ill., by Cutler-Hammer Inc., Milwaukee. Construction of the single-story, 300,000 sq-ft building starts this spring and is expected to be completed early next year.

The plant will make safety switches, circuit breakers and other apparatus in the company's low voltage electrical line. Between 450 and 500 will be employed.

Kelsey-Hayes Builds in Ohio

Steel Products Engineering Division, Kelsey-Hayes Wheel Co., Springfield, O., will start a 100,000 sq-ft plant in the spring. Estimated cost: $1 million.



How GSA Operates; Mag Plants for Sale

IN THE NEXT few months, look for the General Services Administration to cut its inventory of industrial properties substantially. That's the word from Thomas L. Peyton, director of the disposal division. GSA's total inventory stands at about $249 million on the basis of original acquisition costs, plus capital expenditures for improved facilities. That figure does not include the Nicaro, Cuba, plant which carries a tag of about $40 million and is under contract to National Lead to supply Uncle Sam with nickel.

The offer to sell two magnesium producing facilities at Painesville, O., and Velasco, Tex., points up some of the problems GSA faces in the disposal of property deemed surplus by the Defense department (see page 170).

First, GSA has to get its price. Reports that the plant at Painesville might go for $1.4 million bother the agency no end. Such reports are usually based on the assumption that GSA sells its properties for 10 cents on the dollar. "Not true," comments Mr. Peyton. Of 1068 plant sales made under GSA and War Assets Board, the average sale was for 35.1 per cent of acquisition cost.

Actually, he points out, the acquisition cost has little to do with the selling cost. Depreciation on these 10 to 15 year old plants could run 50 per cent of the original cost. Before a sale, each property is appraised for its current market value by private sources. The GSA will not sell for less than the appraised value. If it can't get high enough bids, it may sell for less than the appraised value—but not much less. Of 303 GSA sales the last fiscal year, the agency received an average of 97 per cent of the appraised value.

One hitch in obtaining the fair market value: Under law, these plants must be maintained so they can be converted to wartime production within 120 days. In the case of a foundry, the buyer might not be bothered. But a fabricator might be subject to some costs to hold the plant ready for war mobilization.

Behind the coming speed-up in GSA's selling program: 1. The administration's policy of getting out of competition with private business. 2. A number of lessees of GSA plants would like to put some money into improved facilities, but won't do it until they're sure they're building up their own property.

Mr. Peyton reports GSA is now negotiating with six or seven lessees for the sale of plants. "The prospects of arriving at mutually satisfactory prices are good," he adds.

What's the story on Nicaro? "It's not for sale now," says Mr. Peyton. "It will be sold at an appropriate time, and that time has evidently not arrived." National Lead's contract runs out in June.

GSA doesn't always have final authority on its property. That rests with Congress. A possibility for Nicaro: Congress could legislate its sale, as it did with the synthetic rubber plants. Mr. Peyton has no comment on that idea, but it seems within the realm of possibility.

Scrap Investigation Heads List

Note that Rep. Wright Patman (Dem., Tex.) is making no bones about a coming investigation of "monopolistic" practices in the scrap industry. He's head of the House Small Business committee and has slated the scrap situation to be one of two items covered in this session of Congress by the full committee. (The seccond major investigation will concern the financing problems of small businesses.)

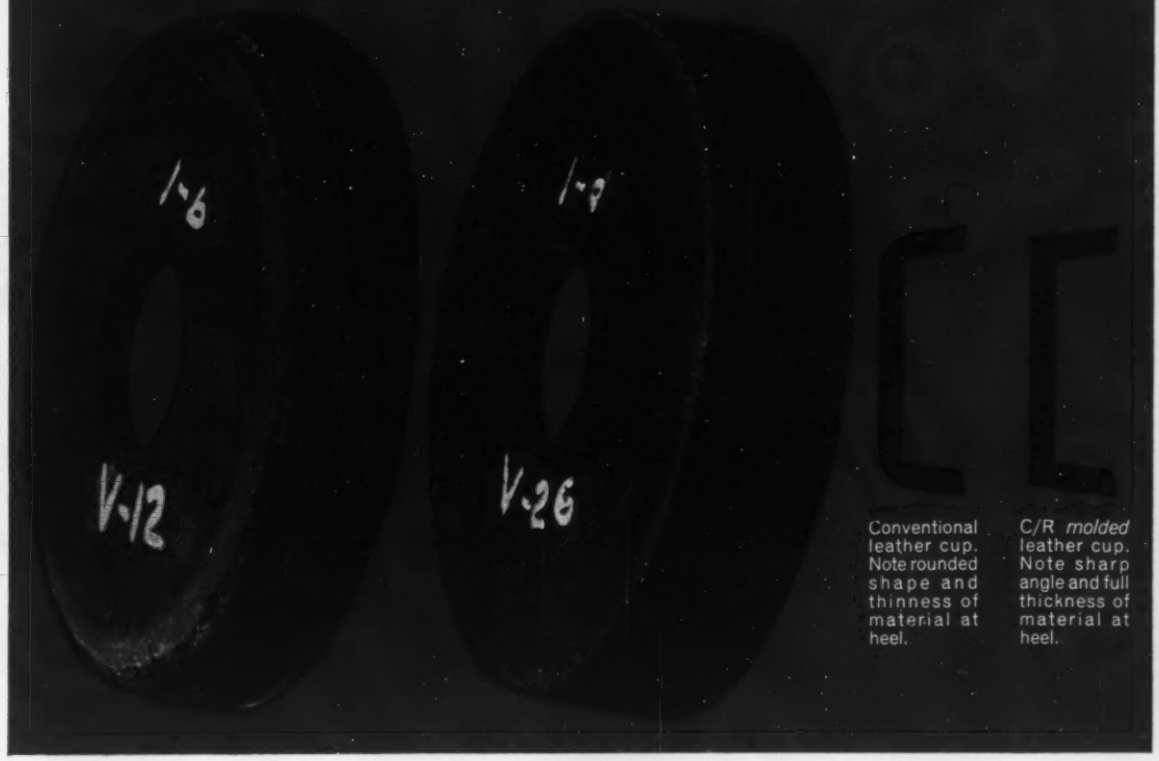
Mr. Patman hints at forthcoming disclosures connected with the case now before the Federal Trade Commission concerning Luria Brothers & Co. Inc. But don't look for anything new to come out of the committee's work because the subject has been thoroughly hashed over in the FTC. Luria will probably answer the government's charges early next year.

Export scrap is another area which interests Mr. Patman. He says the committee is setting up a permanent staff to look into that. He's worried about small firms not getting scrap because of extensive overseas shipments. If Commerce department does lift the current embargo on shipments of heavy melting steel scrap to Japan, United Kingdom and European Coal & Steel Community, look for a fight in Congress, even though Commerce officials privately admit it was a mistake to ban licenses.

Meet Al Minetti:

The new consultant to the Metalworking Equipment Division, Business & Defense Services Administration, is on loan for about six months from Harron, Rickard & McCone Co., San Francisco. Vice president of that company, he will be working on the government's elephant tool and machine tool replacement programs at BDSA.

TEST PROVES C/R MOLDED CUP



Conventional leather cup. Note rounded shape and thinness of material at heel.

C/R *molded* leather cup. Note sharp angle and full thickness of material at heel.

New molded C/R cups* stand up longer... cut down replacement costs

Compare the wear on these piston cups shown in the unretouched photographs above. They were tested in a hydraulic cylinder at 6000 p.s.i. for 3000 cycles. The one at the right is a Sirvis-Conpor molded leather cup. The other is a conventional leather cup. Features of the C/R molded cup that make it so obviously superior are greater density, the sharp, rather than rounded heel, and the fact that it is pre-formed to the shape which conventional cups are forced to assume under pressure. This eliminates operational stress and flexing that conventional cups undergo, and contributes greatly to longer service life.

**Available in J.I.C. standard and other popular sizes. Write for complete size list.*

CHICAGO RAWHIDE MANUFACTURING COMPANY
1245 Elston Avenue Chicago 22, Illinois

Offices in 55 Principal Cities. See your telephone book.

In Canada: Distributed by Chicago Rawhide Mfg. Co. of Canada, Ltd., Hamilton, Ontario

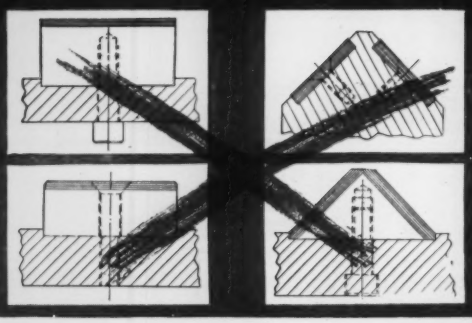
Export Sales: Geon International Corp., Great Neck, New York

Right now, molded C/R cups are providing greatly increased service life in hydraulic cylinders in such heavy duty applications as farm and road building equipment and steel mill equipment at oil pressures up to 3500 p.s.i., and 150 p.s.i. in air cylinders. If you face a difficult packing problem that requires high durability and efficiency . . . it will pay you to consider this new, improved C/R design.

SIRVIS C/R DIVISION
CHICAGO RAWHIDE

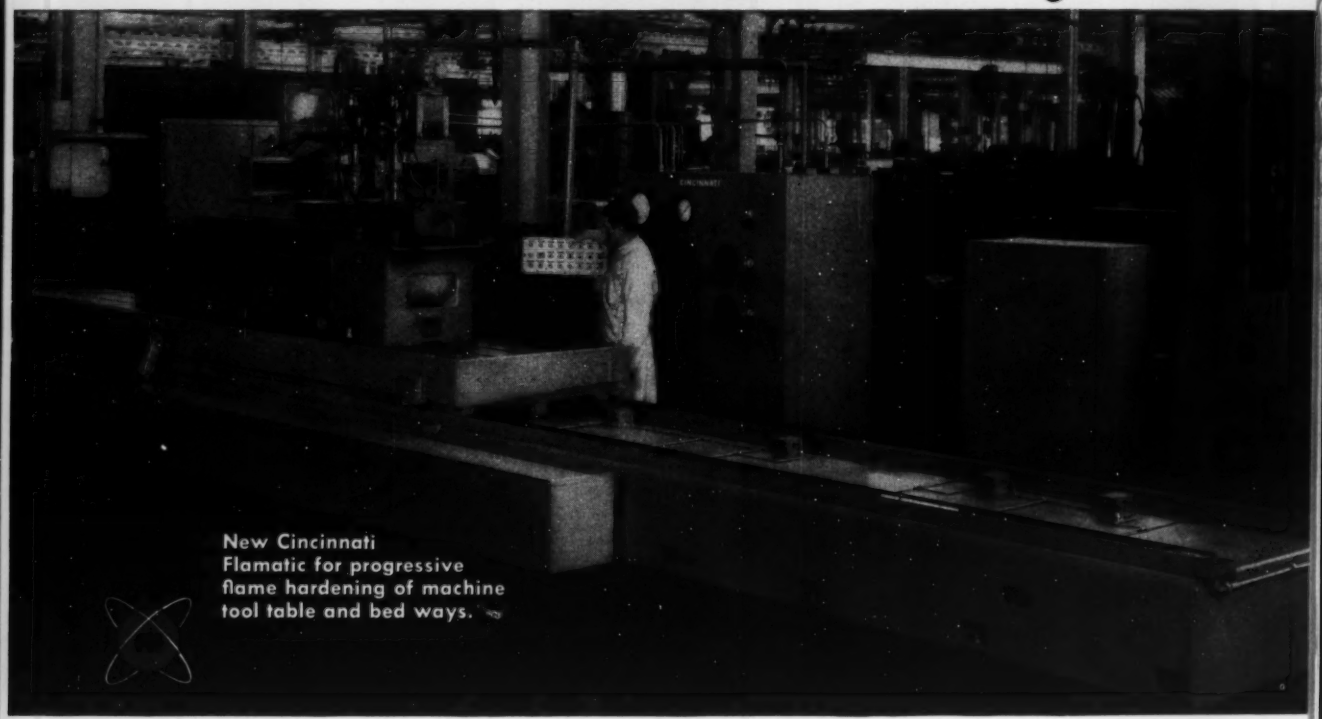
Other C/R Products

C/R Shaft & End Face Seals • Sirvene (synthetic rubber) molded pliable parts • C/R Non-metallic Gears



eliminate costly ways to get hardened ways...

use the **flamatic** *way!*



New Cincinnati Flamatic for progressive flame hardening of machine tool table and bed ways.

Cast iron machine tool table and bed ways are now being surface hardened on this new Cincinnati Flamatic®. Uniform hardness of Shore 75-80 is achieved. This Flamatic method results in substantial cost savings over methods currently employed of fastening hardened steel wear strips or sheets to cast or welded components in sliding contact.

The reciprocating work table of the Flamatic can accommodate castings up to 20 feet long x 44 inches wide x 40 inches high, on which integrally cast ways are to be hardened. Table feed is infinitely variable between 3″ and 15″ per min., and rapid traverse is at 25 ft. per min. Flame heads are mounted on a rail, powered for rapid positioning of the flame heads to the ways to be hardened. The flame head assembly includes water spray quench and a tracer mechanism, which at all times maintains the prescribed gap distance of the flame from the way . . . compensating for any distortion of the casting.

Oxy-acetelyne fuel gas is used; however, the unit will operate on propane or natural gas. Complete operating controls are located on a pendant station. Flame hardening of work such as columns, rolls, long bars and shafts, which can be held between centers on the table, is also accomplished.

Check into Flamatic surface hardening for savings in your production processes. Call in a Process Machinery Division field engineer.

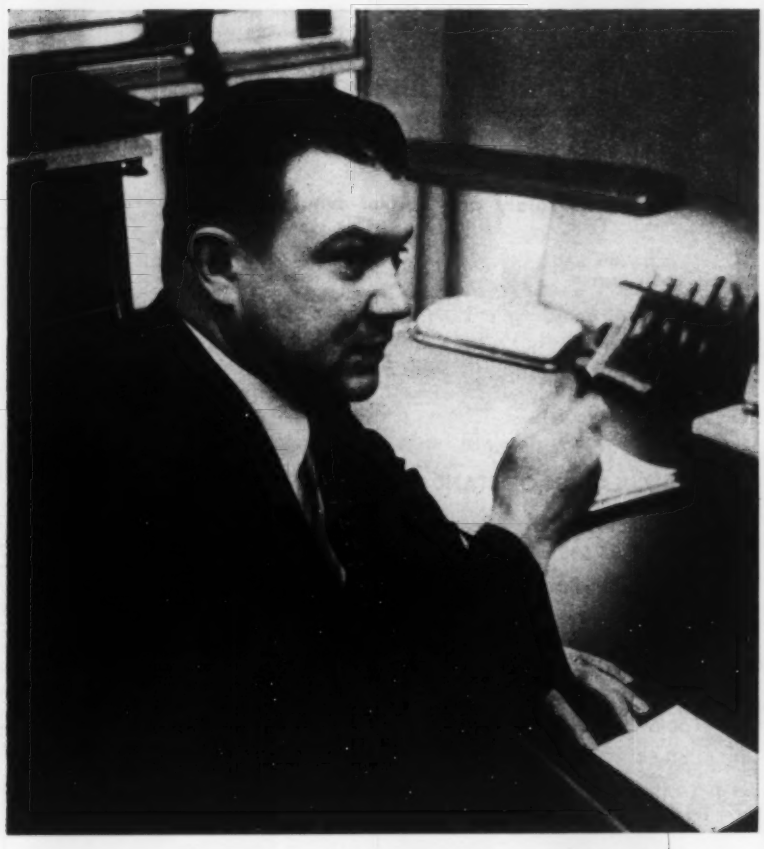
CINCINNATI

flamatic and inductron

PROCESS MACHINERY DIVISION

THE CINCINNATI MILLING MACHINE CO.

CINCINNATI 9, OHIO, U. S. A.



Pittsburgh Steel's Maxcy keeps tab on orders, deliveries . . .

Planned Production Pays

IT'S HARD to keep sales and production together when a steelmaker turns out a wide range of products subject to periodic ups and downs in demand. Add disruptions caused by a $114 million expansion over seven years and you have a tough test for production planners.

Pittsburgh Steel Co., Pittsburgh, turned the trick. It was able to fill an increasing volume of orders in 1956 despite a number of disruptions. Delays were caused by the expansion of seven (of twelve) open hearths and the installation of 19 new coke ovens. Two blast furnaces were remodeled. Expansion of open hearth capacity and renovation of a strip specialties mill extended into this year.

Experts—Pittsburgh Steel gives a lot of credit to its new production planning department. Manager K. F. Maxcy Jr. sums up results gained by co-ordinating sales and production: "We can find and maintain our best pattern of product mix. We enjoy efficient production. Our customers know where their orders are and when we will deliver the steel."

Before 1955, separate sales and operating divisions at Pittsburgh Steel collected and scheduled orders. With no good system to find the exact status of each order, shipping promises were sometimes unrealistic. Company executives discovered that some order handling work was duplicated. They decided to organize a new unit to work closely with sales and operating divisions, yet be independent of each.

Pittsburgh Steel gave its new group two tasks: Know what mills can produce and when; tailor order loads to production capacity. This launched the sales-production co-ordinating group in 1955. Mr. Maxcy and D. J. Shaughnessy, assistant manager, head a 110-man department which is scattered through company headquarters, plants in Monessen and Allenport, Pa., and the Thomas Strip Division, Warren, O.

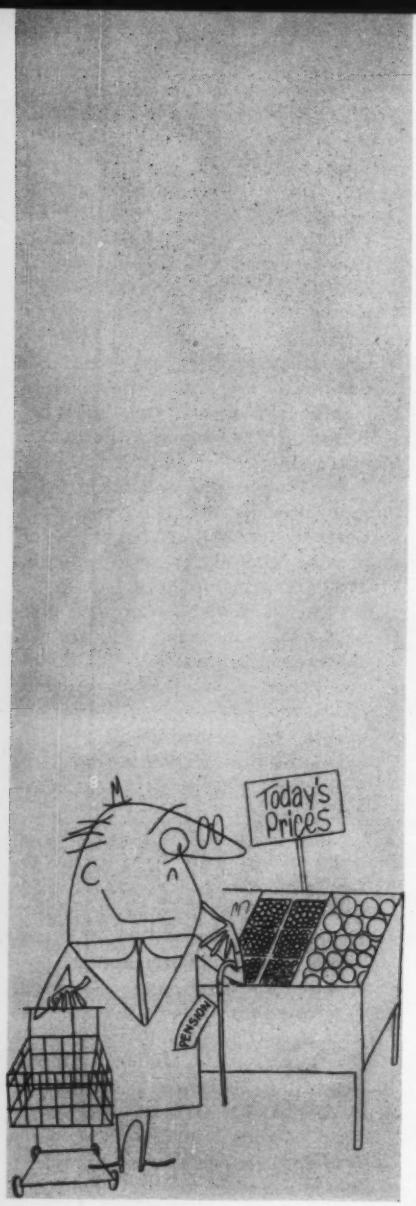
Drawing Plans — Marvin Bair, vice president, sales, and John Cercone, general manager, sales, provide quotas for each product. Production planning then prepares a forecast of the order load pattern, based on order backlogs and sales expectations. P. E. Sance, vice president, operations, provides an estimate of tonnage from open hearth and blooming mills. The combined information forms a coordinated plan for a six-month period.

Quick Work—Mill scheduling units order steel from copies of forms handled by production planners. Charts show progress of each order. Instead of requiring three or more days to pass through the Pittsburgh office, the company now processes orders in half that time. The customer benefits by having an exact shipping promise.

Allison R. Maxwell Jr., president, reports that first quarter operations are scheduled at capacity; and second quarter ingot production should remain near present levels. With seasonal improvements expected in merchant wire products, and demand for oil country tubular products growing, production planners expect another challenging year.

$10,000 for an Idea

To stimulate constructive thinking and to reward ingenuity, U.S. Steel Corp. has initiated a suggestion plan for nonmanagement personnel with a top award of $10,000. President Clifford F. Hood defines a suggestion as "a proposal of a definite idea which will lead to the establishment of new or improved practices, products or facilities."



National Airlines Pension Plan in Operation

Hypothetical employee begins work at age 27, enters plan at age 32 when wage rate is $4000 and cost-of-living index is 114. Assume his salary and cost-of-living index progress this way:

Age and service	Annual pay for each year	Cost-of-living index average
32-39 (8 years)	$ 6,000	121
40-49 (10 years)	9,000	145
50-59 (10 years)	11,000	175
60-64 (5 years)	14,000	205

CALCULATION OF STANDARD PENSION

1. Initial unit for service prior to entering plan
   0.75% of $4,000 x 5 years $150
2. Subsequent units of pension

Age	Unit calculation	Value
32-39	0.75% of $4,200, plus 1.5% of $1,800 x 8 years	$ 468.00
40-49	" " " $4,800 x 10 "	1,035.00
50-59	" " " $6,800 x 10 "	1,335.00
60-64	" " " $9,800 x 5 "	892.50
	Total standard pension	$3,880.50

CALCULATION OF COST-OF-LIVING ADJUSTMENT

Age	Standard pension units	Adjustment factor	Adjusted value
Initial unit	$150.00	205/114	$ 269.74
32-39	468.00	205/121	792.89
40-49	1,035.00	205/145	1,463.28
50-59	1,335.00	205/175	1,563.86
60-64	892.50	205/205	892.50
		Total adjusted pension	$4,982.27

Pension Plan Nips Inflation

National Airlines adjusts benefits by a formula based on cost-of-living index. It's adaptable to metalworking plans and protects pensioners from loss in buying power

HOW DO YOU set up a pension program to protect retired employees against inflation?

National Airlines Inc., Miami, believes it has the answer—integrate it with the government's cost-of-living index. A. G. Hardy, senior vice president, outlined the program at the employee pension and benefit conference of American Management Association in Chicago.

Summary—Here's how the employee benefits: 1. It relates pension benefit units he earns to changes in cost of living during his employment. 2. It reflects changes in cost of living after he retires.

Here are the mechanics. (An example is illustrated above.)

Formula—An employee enters the plan after five years' service. At that time, he is given an initial pension unit for his first five years of employment. Formula: 0.75 per cent of his current salary multiplied by 5.

Subsequent pension units are

credited to the employee at the end of each year of employment. Formula: 0.75 per cent of first $4200 in earnings, plus 1.5 per cent of all earnings above $4200.

The cost-of-living index figure used is a two-year moving average based on the Consumer Price Index published by the Bureau of Labor Statistics.

When the employee retires, each unit of pension is adjusted in the same proportion as the change in the cost-of-living index during the period covered by the date of pension accrual to the date of retirement. (Suppose an employee earns a pension unit of $100 in 1956 when the cost-of-living index was 116 and at his retirement the cost-of-living index is 140. That particular unit is adjusted by the equation: 100/116 = X/140—resulting in an adjusted value of $121 for 1956.)

The cost-of-living index at the employee's retirement becomes his cost-of-living base figure for determining pension adjustments after retirement. Adjustments are not made as long as the current index remains within 90 to 105 per cent of the employee's base index at retirement.

Review—Each six months after retirement—in April and October—the current cost-of-living index is determined. If this index exceeds the base figure range by more than 5 per cent, an adjustment is made. Say the current cost of living has risen 10 per cent above the base figure: The pension benefit is increased 5 per cent. If the cost of living then falls to 5 per cent or less above the base, the increase is wiped out.

Suppose the current cost of living falls below 90 per cent of the base figure. A downward adjustment is made to reflect the difference between the 90 per cent and actual ratio to the base figure. An 85 per cent cost-of-living figure would result in a pension reduction of 5 per cent.

Checks—"We have two safeguards to protect against runaway inflation," Mr. Hardy points out.

1. In adjusting pension units at retirement, no adjustment can be greater than 7.5 per cent multiplied by the number of years from the date of pension accrual to date of adjustment.

2. In postretirement adjustments, no adjusted pension can amount to more than 5 per cent above that paid in the previous six-month period.

Here are some additional features of the plan:

1. It is entirely company financed. Under a contributing option, an employee is able to increase each year's accrued pension units by 0.6 per cent of his annual salary. In the accompanying illustration, such an option increases the adjusted pension to $7426.79.

2. A death benefit is provided before and after retirement. Before retirement, it amounts to five times the annual pension projected to age 65 (at the employee's salary at death). After retirement, the benefit amounts to five times his annual pension reduced by the amount already paid in retirement benefits.

3. National Airlines has no compulsory retirement at 65, but further service does not count toward pension benefits. An employee may retire after 55 if he has at least 15 years' service and the company's permission.

4. The employee receives a vested interest in the plan at 50 and completion of at least 15 years' service.

Financing—"Our studies showed that over the last 50 to 60 years, average annual inflation has been slightly less than 3 per cent. In calculating our costs, a direct allowance has been made for 1 per cent annual inflation. We believe that the growth value of our equity securities will equal the additional inflation costs," says Mr. Hardy.

The investment philosophy of the plan requires a substantial part of the fund to be invested in equities since they tend to respond more to inflationary pressures.

National Airlines is currently investing 50 per cent of the fund monies in equities—this compares with an average of 20 to 30 per cent for most pension trust programs. "We hope, as additional monies are paid into the fund, to increase the proportion of equity securities up to 75 per cent," says Mr. Hardy.

Expense—The present cost of the plan—it was set up in 1954—is 11.2 per cent of payroll. "But," says Mr. Hardy, "as the fund builds up and earnings increase, the contribution will certainly be reduced — conceivably to some point where little or no contribution is necessary to maintain fund requirements."

• An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, O.

Per Capita Tax at New High

Population increases have not kept up with the rise in per capita taxes collected by the federal government during the last five years, says Commerce Clearing House.

Our population has grown 9 per cent since 1951. Our average tax payments went up 37 per cent.

In 1951, when population stood at 154,353,000, the per capita tax was $326.82. Five years later, 168,091,000 Americans paid $446.86 per capita. From 1866 to 1916, the figure varied little, averaging about $3. It jumped sharply during and after World War I, climbed some more in the World War II decade, then soared to an all-time high in 1956.

Executive Reserve Growing

The naming of 53 more industry executives as members of the National Defense Executive Reserve has increased that agency's enrollment to 271. The goal is 600.

Working as a unit of the Business & Defense Services Administration, the reserve will provide a pool of industry experts who can be called upon for immediate service with the government in a national emergency. As in World War II and the Korean War, these men will serve without compensation.

More than 500 industry experts say they're willing to participate.

Yale & Towne Ups Spending

Gilbert W. Chapman, president, Yale & Towne Mfg. Co., says the company will spend about $6 million for capital improvements this year, compared with $4 million last year.

JUST PUBLISHED!

New 24-page brochure gives complete engineering data

Here's the story of fatigue-proof steel bars

MADE BY THE e.t.d. PROCESS

Elevated Temperature Drawing

*a **new** material—made by*

*a **new** process—with*

*a **new** combination of properties*

High Strength
Free Machining
Uniformity
Fatigue Resistance
Wear Resistance
Dimensional Stability

Plus Accuracy, Smooth Finish, and Straightness

Use this coupon to request your copy

T. M.—Trade-marks of La Salle Steel Company

La Salle STEEL CO.

1414 150th Street
Hammond, Indiana

Please send me your new 24-page brochure, "A New Material"

Name_____

Title_____

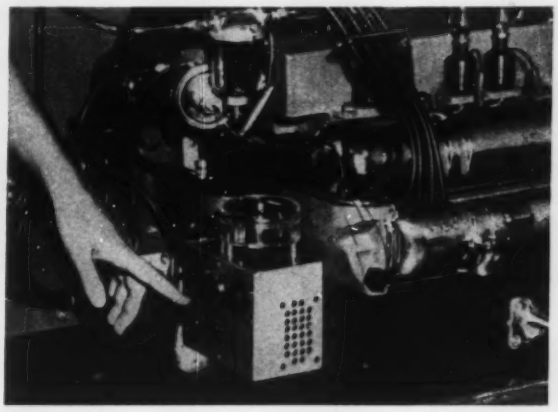
Company_____

Address_____

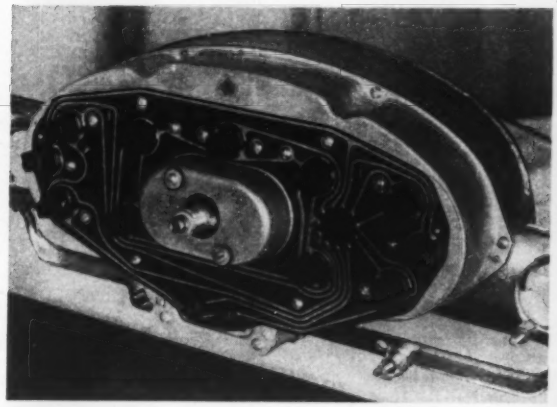
City_____ Zone____ State_____

Where electronics helps today....

Electronic equipment checks car handling at Chrysler



Bendix electronic fuel injection system eliminates carburetor



Oldsmobile uses printed electric circuit for instrument cluster

Where it may turn up tomorrow....

- **Electronically operated transmissions**
- **Dash mounted instruments to automatically regulate engine performance**
- **Self-regulating devices to compensate for road handling**

Electronics Comes to Detroit

ELECTRONICS is becoming a household word in the auto industry.

Since 1954, car builders have spent an estimated $125 million for electronic testing and gaging equipment. And they've put at least an equal amount into developing and manufacturing electronic devices for use in cars.

Right now, men in the know are reluctant to talk about electronic units except in broad or far distant terms. This is interpreted to mean that developments are under way.

Breakdown — This much is known: In auto circles, electronics can be broken into three groups:

• Manufacturing and research equipment such as Chevrolet's recently announced pushbutton proving ground. Test track conditions are duplicated on an electronic programmer.

• Component parts which have been developed primarily for the electronics industry. Radio transistors and printed circuits like the ones used in Oldsmobile instrument clusters are good examples.

• Actuating units for use on automobiles. The electronic "brain box" Bendix uses to correlate fuel flow impulses in its fuel injection system is a current use. Engineers also report that GM's Autotronic eye (for automatic headlight dim-

(Material in this department is protected by copyright, and its use in any form without permission is prohibited.)

ming) operates electronically.

Definitions—What is electronics as auto makers see it?

Glen R. Fitzgerald, chief automotive engineer, AC Spark Plug Division, General Motors, says: "I like to think of electronics as devices which deal with vacuum tubes or transistors."

John A. McDougal, assistant chief engineer in charge of AC's instrument group, differentiates between electrical and electronic systems this way:

"Electronics can be described as devices where the electrons do not move entirely over or through solid conductors (such as wires)."

Advantages — Immediate response and sensitivity are the best reasons for using electronics in a car, say the experts. In addition, the sensory devices usually take up much less space than mechanical or hydraulic linkages.

But Mr. McDougal points out: "Electronic devices today usually are more susceptible to failure than mechanical units."

Vacuum tubes may fail, electrical elements can short out and speed or strength of electronic impulses may vary as operating temperatures change.

Adds Mr. Fitzgerald: "You can see failure in mechanical parts, but electronic failures call for specially trained trouble shooters."

Cautious—Since cost always is a factor, Dr. L. J. Giacoletto, manager of Ford's electrical department in its Scientific Lab, suggests that auto makers will hold off on electronic actuators until they're pretty sure that a part or mechanism can't be operated hydraulically or mechanically.

Outlook—Next year and in 1959, more printed circuitry and transistors will be used in electrical instruments and ignition systems.

In a few years, hints Philip J. Monaghan, general manager, GMC Truck & Coach Division, electronic feedback controls will monitor engine - transmission relationships. This, in effect, will result in electronic instead of hydraulic transmissions.

Other sensing units will feed back information to make the changes necessary for best engine performance and to control ride characteristics under different road conditions.

Crystal Ball—Looking into the future, Messrs. Fitzgerald and McDougal suggest these possibilities:

Automatic steering—A photoelectric cell will scan a painted strip on the pavement, keeping the car in the proper lane.

Inter-auto control—More complex systems could be used to control the distance between two cars or could stop cars in case of a collision ahead.

While such ideas are possible, they aren't practical today. Emphasizes Mr. McDougal: "In any of these systems, the driver must be able to override the device in an emergency."

Some Layoffs Reported

Seasonal pruning is showing up in automotive plants.

Most of it is aimed at getting inventories in balance and shaking down divisions for the production year ahead.

There are rumors of assembly line layoffs in some GM divisions which have been hard hit saleswise.

Buick Division reportedly has laid off about 300 workers in Flint, Mich.

A Lansing, Mich., source says Oldsmobile has dropped "more than 200 men" from its assembly lines.

U.S. Auto Output

Passenger Only

	1957	1956
January	642,089	612,078
February	571,098	555,596
2 Mo. Total	1,213,187	1,167,674
March		575,260
April		547,617
May		471,617
June		430,373
July		448,876
August		402,575
September		190,726
October		389,061
November		581,803
December		597,226
Total		5,802,808

Week Ended	1957	1956
Feb. 16	145,846	128,320
Feb. 23	138,938	125,537
Mar. 2	140,362	132,889
Mar. 9	140,161	132,840
Mar. 16	140,889†	131,207
Mar. 23	141,500*	131,287

Source: *Ward's Automotive Reports.* †Preliminary. *Estimated by STEEL.

Other GM layoffs center in the Delco Appliance Division at Rochester, N. Y. (300 workers idled) and at the Delco Products Division, Dayton, O. (250 off since Mar. 1).

Ford Motor Co. has dropped about 700 probationary workers at its Cleveland engine and foundry division plant.

Gleam — On the brighter side, Ford is hiring 1300 more men for second shift operations at its Kansas City, Mo., assembly plant.

Chrysler is still scheduling six-day operations for Plymouth and Chrysler production.

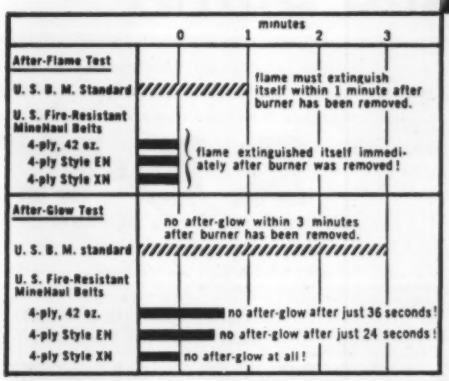
Exhaust Notes

- Ford Motor Co. plans to spend $6.7 million remodeling its Highland Park, Mich., plant. The program calls for a new power plant, modernization of tractor assembly operations and expansion of trim manufacturing facilities.
- General Motors' AC Spark Plug Division has purchased two 900-ton and ten 300-ton presses for its Flint, Mich., plant. They will be used for production of 1958 air cleaners. Cost is estimated to be $1.5 million. It includes installation and additional material handling equipment. A centralized scrap conveyor system is also in the works.
- Ford Motor Co. reports retail sales for the first two months of 1957 are 22 per cent over those in the same period of '56, about 3700 units ahead of the record 1955 months.
- De Soto sales in January and February have increased 11 per cent over those in the first two months of 1956.
- Mercury sales are 9.6 per cent higher than they were in 1956. Close to 40,000 cars have been sold since the first of the year—about 3500 more than the same period in 1956.
- White Motor Co., Cleveland, reports its Autocar Division has developed an off-the-highway dump truck with a 25-ton payload capacity. The truck sports an all-welded, box-section frame that is reinforced with corrugated plates, a planetary gear drive rear axle and a built-up sectional radiator.
- De Soto now offers two taxicab models after a two-year layoff in this field.

Fire-Resistant MineHaul Belt

MEETS and EXCEEDS all existing fire-resistance regulations

Comparison of U.S. Fire-Resistant MineHaul Belts with standards as set forth in United States Bureau of Mines Schedule 28*


minutes
0
1
2
3
After-Flame Test
U. S. B. M. Standard
flame must extinguish itself within 1 minute after burner has been removed.
U. S. Fire-Resistant MineHaul Belts
4-ply, 42 oz.
4-ply Style EN
4-ply Style XN
flame extinguished itself immediately after burner was removed!
After-Glow Test
no after-glow within 3 minutes after burner has been removed.
U. S. B. M. standard
U. S. Fire-Resistant MineHaul Belts
4-ply, 42 oz.
no after-glow after just 36 seconds!
4-ply Style EN
no after-glow after just 24 seconds!
4-ply Style XN
no after-glow at all!

*as tested in United States Rubber Company laboratories in accordance with Bureau of Mines test specifications.

Testing these belts in U. S. Rubber's own laboratory—*in accordance with Bureau of Mines specifications*—it was found that U. S. Fire-Resistant MineHaul Belts not only meet but EXCEED all existing fire-resistance standards (see chart to left).

These new belts have been given the Bureau of Mines acceptance designation: "Fire-Resistant, U.S.B.M. No. 28-5."

U. S. Fire-Resistant MineHaul Belts combine maximum fire safety with all the qualities you've come to expect in a "U.S." belt: optimum troughability, high impact resistance, outstanding rip resistance, excellent fastener-holding ability, added edge protection, mildew resistance—to name a few.

Obtainable at the 28 "U.S." District Sales Offices, at selected distributors, or write us at Rockefeller Center, New York 20, N.Y.

Mechanical Goods Division

United States Rubber

"A wing and a prayer" ...and plenty of nuts and bolts!

ABOUT A THOUSAND assorted nuts and bolts keep this airborne performer in one piece despite the beating it takes show after show.

Obviously, the fasteners that keep the parts together have to be strong and flawless to stand up under the terrific stresses.

They do a big job, these standard fasteners. Take the automotive industry alone — over *10 billion* fasteners used last year!

RB&W—A MAJOR SUPPLIER TO INDUSTRY

A leader in the field for over 111 years, RB&W turns out the finest fasteners possible to meet the insatiable needs of automotive and other major industries.

Modern facilities, new techniques, long experience . . . all combine to make RB&W fasteners truly the "strong point of any assembly."

SEND FOR THE RB&W "FASTENER MAN"

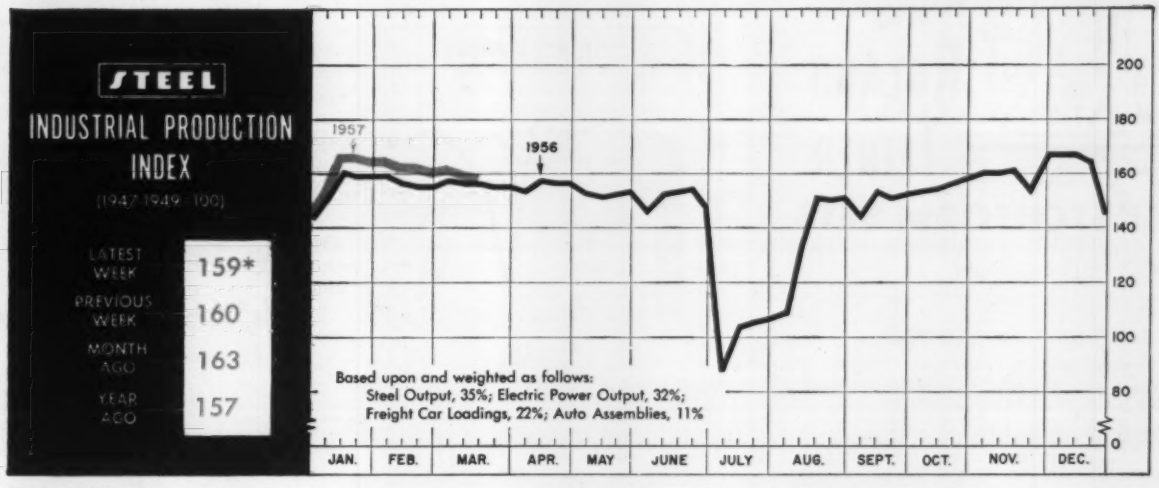
If the product you make is assembled with fasteners, chances are the RB&W "Fastener Man" can find a way to save you money. He can recommend and supply the right standard fastener for just about every job. Contact your nearest RB&W office.

RB&W
111th year

RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY

Plants at: Port Chester, N. Y., Coraopolis, Pa.; Rock Falls, Ill., Los Angeles, Calif. **Additional sales offices at:** Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. **Sales agents at:** Milwaukee; New Orleans; Denver. **Distributors from coast to coast.**

RB&W FASTENERS - *Strong Point of any assembly*



*Week ended Mar. 16.

Production Follows Last Year's Pattern

EVIDENCE indicates that industrial production in 1957 will be a lot like it was in 1956: A high plateau early in the year, a vacation dip toward midyear, then a mild upswing in the third and fourth quarters.

The first phase of this trend has been seen for several weeks in STEEL's industrial production trend line (above). Now the Federal Reserve Board reports that February production held at the same high level charted for the previous four months. At 146 per cent of the 1947-1949 average, the FRB index was equal to the October, November and January marks and was only 1 point below the all-time high of December. Compared with last year's figures, the index is 3 points above the January-February level.

Due for Dip — STEEL's index, which is not seasonally adjusted, often forecasts the direction of the adjusted FRB index one month in advance. Our index has been trailing off slightly this month, as it did a year ago when the government's indicator dropped 2 points. It is reasonable to expect the FRB index to be down a point or two when March figures are released.

The important thing to note is that both indexes are holding above year-ago levels. In view of the widespread talk about unused capacity in some of our basic industries, this may seem surprising. But don't forget: The past year was one of unusual expansion activity. Demand and production today could match that of early 1956, and we would still have idle production capacity. This is especially true of such industries as appliances, which have expanded rapidly for long term growth. Short-term cutbacks and competition will weed out some of the less profitable operations, but those that remain will be in excellent condition to take advantage of anticipated greater demand in the future.

Gains Vs. Losses—Actually, production today is still pretty strong, although the "mix" has changed

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	2,392[1]	2,401	2,449
Electric Power Distributed (million kw-hr)	11,800[1]	11,867	11,202
Bituminous Coal Output (1000 tons)	9,695[1]	9,800	9,554
Petroleum Production (daily avg—1000 bbl)	7,700[1]	7,813	7,153
Construction Volume (*ENR*—millions)	$412.3	$320.4	$648.9
Auto, Truck Output, U. S., Canada (*Ward's*)	173,276[1]	169,054	167,014
TRADE			
Freight Car Loadings (1000 cars)	675[1]	672	686
Business Failures (Dun & Bradstreet)	327	284	268
Currency in Circulation (millions)[3]	$30,609	$30,565	$30,276
Dept. Store Sales (changes from year ago)[3]	−10%	−4%	+7%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$21,783	$24,174	$20,715
Federal Gross Debt (billions)	$276.1	$276.2	$279.9
Bond Volume, NYSE (millions)	$18.1	$20.5	$29.0
Stocks Sales, NYSE (thousands of shares)	8,288	9,048	15,428
Loans and Investments (billions)[4]	$85.0	$85.0	$84.3
U. S. Govt. Obligations Held (billions)[4]	$25.5	$25.7	$28.2
PRICES			
STEEL's Finished Steel Price Index[5]	227.41	227.41	227.10
STEEL's Nonferrous Metal Price Index[6]	239.9	239.6	286.0
All Commodities[7]	116.9	116.8	112.5
Commodities Other Than Farm & Foods[7]	125.3	125.3	120.6

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1957, 2,559,490; 1956, 2,461,893. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

NOW, ENGINEER BY TELEPHONE

using

ROLAND TEINER

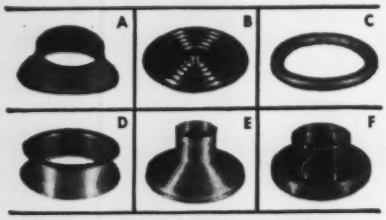
SKETCHFORM SETS

with letter-number, quick reference background to discover economies by metal spinning, spinforming and hydroforming, for model making and sample runs.

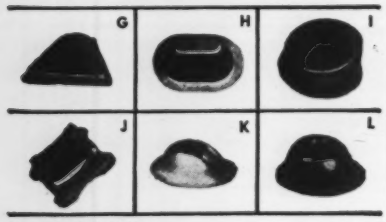
The set that makes copies instantly, without carbon paper. Write Roland Teiner, Everett 49, Mass. for free copies. Use them to request quotations, order models or develop engineering data.

TRY TEINER

for all fabrications including metal spinning, spinforming, hydroforming, welding and finishing.



METAL SPINNING AND SPINFORMING:
Typical items: A—Aircraft detail; B—Decorative cover; C—Retainer ring; D—Winding reel; E—Electronic shield; F—Electrical detail.

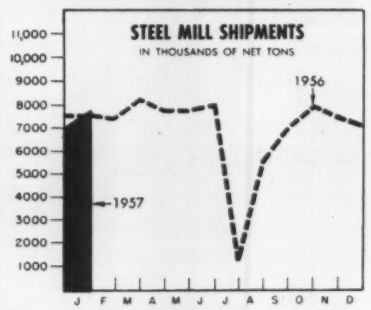


HYDROFORMING:
Typical items: G—Aircraft detail; H—Spindle cover; I—Aircraft detail; J—Auto bracket; K—Light reflector; L—Air cleaner.

ROLAND TEINER Company, Inc.

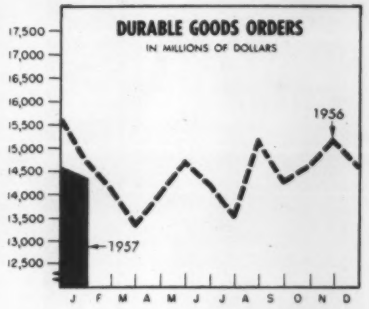
DEPT. 39- 134 TREMONT STREET, EVERETT 49, MASS.
Telephone Everett 7-7800
ENGINEERING REPRESENTATIVES IN PRINCIPAL CITIES

THE BUSINESS TREND



	Net Tons 1957	1956	1955
Jan.	7,809,451	7,587,870	6,009,958
Feb.	.....	7,468,393	6,119,900
Mar.	.....	8,255,824	7,268,795
Apr.	.....	7,783,873	7,279,321
May	.....	7,764,776	7,540,889
June	.....	8,077,805	7,770,213
July	.....	1,288,988	6,250,597
Aug.	.....	5,539,915	7,053,615
Sept.	.....	7,058,028	7,378,247
Oct.	.....	7,930,957	7,216,821
Nov.	.....	7,431,136	7,247,994
Dec.	.....	7,064,093	7,580,943

American Iron & Steel Institute.



	New Orders* 1957	1956	Sales* 1957	1956
Jan.	14,346†	14,683	14,567†	13,595
Feb.	.....	14,107	.....	13,593
Mar.	.....	13,337	.....	13,294
Apr.	.....	14,073	.....	13,519
May	.....	14,732	.....	13,754
June	.....	14,185	.....	13,850
July	.....	13,513	.....	12,627
Aug.	.....	15,166	.....	13,665
Sept.	.....	14,266	.....	13,692
Oct.	.....	14,591	.....	14,199
Nov.	.....	15,130	.....	14,321
Dec.	.....	14,544	.....	14,507

*Seasonally adjusted. †Preliminary.
U.S. Office of Business Economics.

Charts copyright, 1957, STEEL.

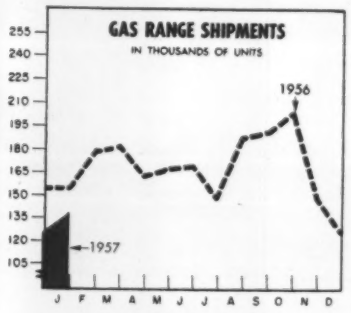
from that of a year ago. While some industries have gained, others have declined, leaving the scale in balance. Employment figures for February pointed up this "rolling adjustment." Total employment increased by some 600,000 over January's. While the number of factory workers decreased slightly, the number of agricultural and self-employed workers advanced. Within the metalworking industries, there were partially offsetting adjustments. Four groups (primary metals, fabricated products, electrical machinery and transportation equipment) declined slightly, but machinery advanced, making up for much of the drop. All but primary metals were above year-ago marks.

Gains Offset Losses

STEEL's production index also illustrates this feature. Last year at this time, strong steel operations provided the "extra power" to offset downtrending automotive production. This year it's just the opposite. Steel mills poured 2,392,000 net tons for ingots and castings last week, according to the American Iron & Steel Institute. That's down nearly 60,000 tons from the year-ago figure. The auto industry assembled nearly 163,000 cars and trucks during the week ended Mar. 16, says *Ward's Automotive Reports.* That's up about 8000 units from the corresponding 1956 week. Freight car loadings are still running well below the 1956 pace, but output of electric power is surging 5 to 6 per cent ahead of a year ago.

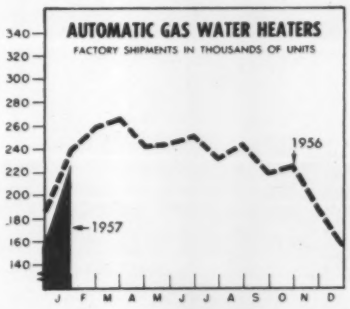
Tight Money No Problem

Tight money is still with us, but at least one important metalworking industry is not finding it a detriment. A survey made by the American Machine Tool Distributors' Association reveals that most of its members are finding capital available to finance an increased volume of new orders on an extended payment basis. About 30 per cent of the respondents reported the current money supply in their areas is about the same as last year's, while 70 per cent said it is tighter. "The fact remains," says Joseph F. Owens Jr., AMTDA president, "that over-all distributor volume thus far in 1957 is good." (For more on machine tool outlook, see page 121.)



	Shipments—Units 1957	1956	1955
Jan.	138,400*	153,500	153,400
Feb.	.....	178,400	186,500
Mar.	.....	181,900	218,100
Apr.	.....	161,400	183,200
May	.....	166,800	187,700
June	.....	169,500	204,000
July	.....	146,800	146,300
Aug.	.....	187,800	220,000
Sept.	.....	191,000	219,100
Oct.	.....	202,900	210,300
Nov.	.....	146,900	184,400
Dec.	.....	125,100	153,600
Totals	.....	2,012,000	2,266,600

*Preliminary.
Gas Appliance Mfrs. Assn.



	Shipments—Units 1957	1956	1955
Jan.	227,300*	239,000	210,900
Feb.	.....	259,200	228,400
Mar.	.....	267,500	263,100
Apr.	.....	241,200	245,200
May	.....	244,300	229,400
June	.....	251,500	227,100
July	.....	231,900	219,300
Aug.	.....	243,500	275,600
Sept.	.....	218,100	237,100
Oct.	.....	224,700	231,200
Nov.	.....	184,400	195,500
Dec.	.....	156,800	185,400
Totals	.....	2,762,100	2,748,200

*Preliminary.
Gas Appliance Mfrs. Assn.

Retailers Cut TV Stocks

Television manufacturers and retailers are attacking their huge inventory with a vengeance. In January, they cut into stocks to the tune of 161,169 units. Retail sales totaled 611,359 sets, while production dropped to 450,190. Demand is holding at nearly the year-ago levels, but increased sales of low-cost, portable sets have resulted in lower dollar volume and less profit for most producers. Several industry observers indicate a move is under way to upgrade their products (with the help of color TV) and improve both figures.

Demand for home radios is continuing above year-ago levels, with January sales of 563,363 sets nearly equaling production of 563,905 units (excluding auto sets).

Prices Level Out

Primary wholesale prices advanced again in February, but at the lowest rate since last October. The new figure is 117.0 (1947-1949 =100), up 0.1 percentage point from the January figure. The increase was accounted for entirely by commodities other than farm and foods, which rose from January's 125.2 to 125.5. Farm products and processed foods both decreased during the month.

Indications are there will be a leveling off or even a slight decline in the index before higher coal and tin plate prices take hold in April. During the first two weeks of March, the all-commodities classification dropped to 116.8 and 116.9 per cent of the base period, while commodities other than farm and foods dropped to 125.3 per cent of the base (see Barometers of Business, page 75).

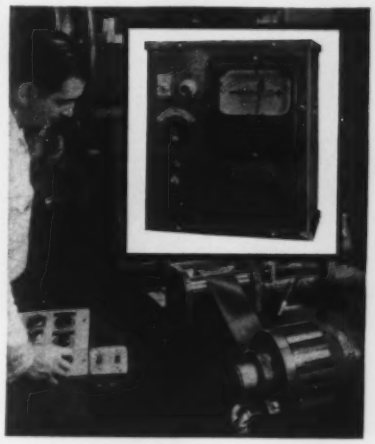
Trends Fore and Aft

• During the weeks ended Mar. 2 and Mar. 9, the volume of retail sales fell below the year-ago levels for the first time in 1957. For the Jan. 1 to Mar. 9 period, sales still are ahead of those of the corresponding 1956 period by 1 per cent, says the FRB.

• Office buildings and shopping centers are responsible for the sudden upsurge in commercial building contracts, says *Engineering News-Record*. From Feb. 15 to Mar. 14, they totaled $257 million, compared with only $103 million for the first seven weeks of 1957.

Somers THIN STRIP

.000175" THIN



Now available in production quantities

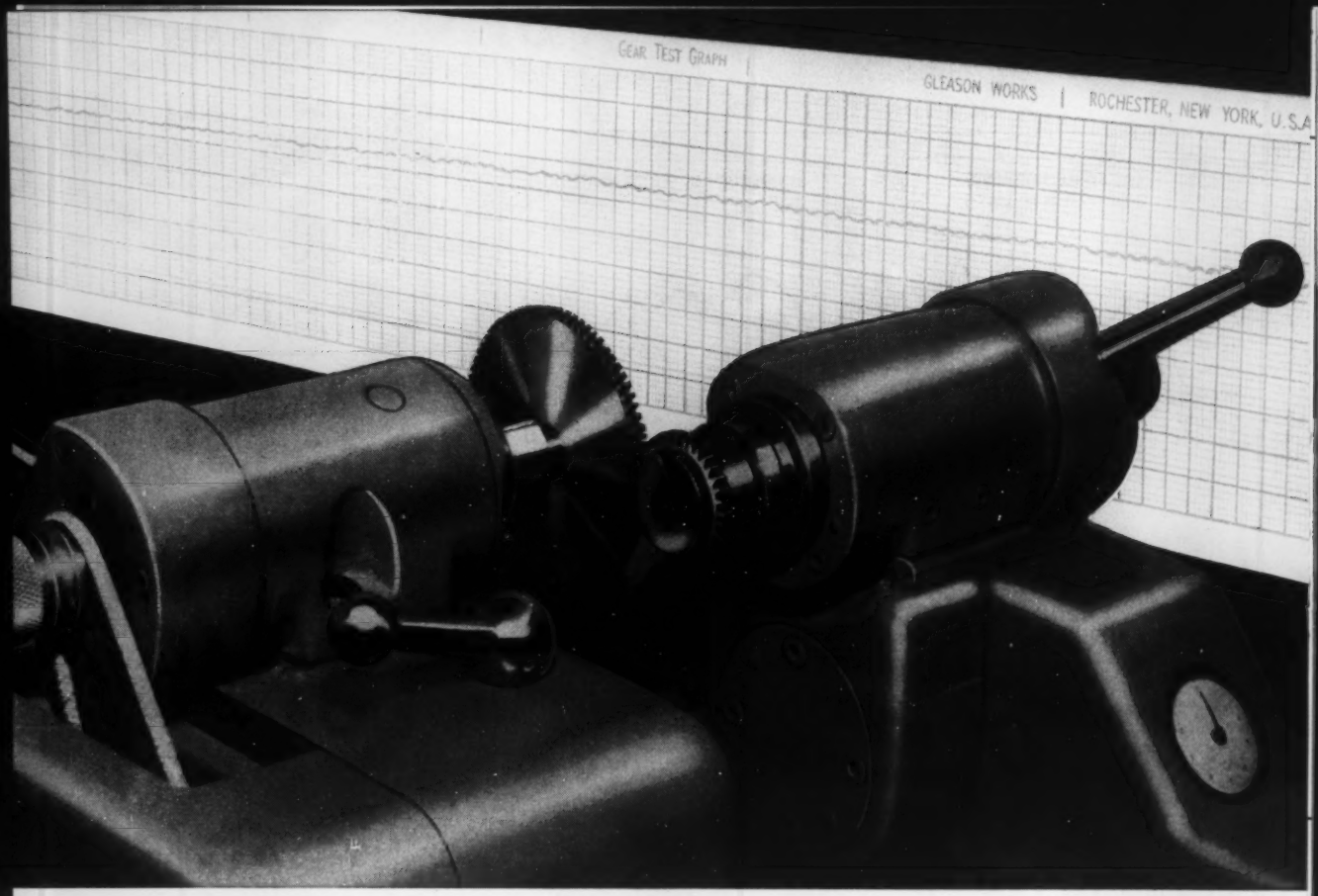
Keeping pace with the advanced design of transistors and other electronic components, Somers Brass Company has installed a unique mill for the production of ultra-thin strip. Brass, copper and nickel are now being rolled down to .000175", up to 4" wide, in footages to satisfy mass production requirements.

You can rely on Somers, specialists for nearly 50 years, for the experience to solve your thin strip problems, whether in design or manufacturing.

Write for Confidential Data Blank and a complete analysis of your present or proposed application at no cost or obligation.

FOR EXACTING STANDARDS ONLY
Somers

Somers Brass Company, Inc.
104 BALDWIN AVE., WATERBURY, CONN.



Make a complete test and record of your small spur and helical gears

You can be certain that your spur and helical gears will operate correctly in their final mountings if you give them a complete test *before* actual assembly.

The new Gleason No. 104 Spur Gear Tester gives you a complete check of your gears. A rolling test for composite error provides a quantitative check of tooth spacing, profile shape and runout.

In this test, the gears are slowly rotated while a calibrated spring load keeps them in metal-to-metal contact. Any error in the gears results in a horizontal movement of the drive spindle. A completely electronic pickup and recorder make a *permanent* chart of the results.

But there is still another test you can make with the No. 104 Tester—a running test, which simulates actual operating conditions, determines the smoothness of operation, noise characteristics, and tooth contact, which will actually be obtained when the gears are used.

This machine tests precision and commercial gears up to $4\frac{1}{2}''$ center distance.

We will gladly furnish further information on the No. 104 Spur Gear Tester. Write for our bulletins.

The No. 104 Tester is furnished complete with an electronic pickup and recorder unit, as shown above.

GLEASON WORKS

Builders of bevel gear machinery for over 90 years

1000 UNIVERSITY AVE., ROCHESTER 3, N.Y.

81

JACKSON KRALL
Milwaukee Malleable post

HARRY M. COOK
Clark Controller sales mgr.

S. J. HUNT
National Automatic Tool

G. L. STANCLIFF JR.
Askania Regulator v. p.

Jackson Krall was appointed sales manager, **Milwaukee Malleable & Grey Iron Works,** Milwaukee. He represented the company in the metropolitan Detroit area and in Michigan and Ohio for the last seven years.

Harry M. Cook was named manager of industry sales of **Clark Controller Co.,** Cleveland. He replaces **W. R. Heckman,** named assistant manager of operations. Mr. Cook was Buffalo-Syracuse district sales manager.

J. C. Fosselman was made sales manager, stoker division, **Canton Stoker Corp.,** Canton, O. He was office sales manager of both the stoker and pump divisions.

Marvin C. Bonine was made manager, **Pacific Switchgear Division,** Federal Pacific Electric Co., San Francisco. He joined the division last August as manufacturing manager. He previously was plant manager at Salem, Va., for Yale & Towne Mfg. Co.

H. Pelphrey was made director of engineering research, **Michigan Tool Co.,** Detroit. He was chief research engineer.

George R. Quaile was elected president, **Pittsburgh Stencil & Tool Co.,** Pittsburgh. **H. C. Rickenbach,** founder of the company, and **P. J. Rickenbach** are now full-time consultants.

Louis Shaffer was made purchasing agent, **Marman Division,** Aeroquip Corp., Jackson, Mich.

S. J. Hunt was elected vice president-engineering, **National Automatic Tool Co. Inc.,** Richmond, Ind. He was director of research and development.

Alvin J. Mistler and **Delbert J. Stoker** were elected vice presidents of **Armco Drainage & Metal Products Inc.,** subsidiary of Armco Steel Corp. Mr. Mistler continues as manager of the midwestern division with headquarters at Topeka, Kans. Mr. Stoker continues as manager, North Pacific division, with offices in Portland, Oreg.

Bastian-Blessing Co., Chicago, named **Hugh A. Barnes** director of purchases to succeed **A. L. Augur,** who continues as executive vice president.

William I. Kryder and **James V. Lester** were elected vice presidents of **Standard Pressed Steel Co.,** Jenkintown, Pa. Mr. Kryder is secretary; Mr. Lester, treasurer.

R. S. Abrams was made manager of production and engineering for the silicones division, **Union Carbide & Carbon Corp.,** New York. He was manager of the silicones plant at Long Reach, W. Va.

B. T. Bowling, R. L. Burton and **J. N. Meyer** were elected vice presidents of **Mosher Steel Co.,** Houston.

Exolon Co., Tonawanda, N. Y., appointed **Daniel F. O'Connor** sales manager; **Harvey J. Robillard,** manager of sales engineering.

G. L. Stancliff Jr. was made vice president and general manager, **Askania Regulator Co.,** Chicago, subsidiary of General Precision Equipment Corp.

John Matchulat was promoted from superintendent of the crucible and refractories division of **Electro Refractories & Abrasives Corp.,** Buffalo, to plant manager in charge of production.

Edward R. Schick was made sales manager of **Union Tool Corp.,** Warsaw, Ind.

Carl B. Wooten was elected executive vice president of **Trecker Aircraft Corp.,** Milwaukee, subsidiary of Kearney & Trecker Corp.

Willard A. Giddens and **James F. Rowe** were elected vice presidents of **Hupp Corp.,** Cleveland.

Edwin E. Proctor, former general manager, Pittsburgh - Des Moines Steel Co.'s warehouse jobbing division, was named president of the newly formed **Proctor-Comstock Steel Co.,** Sacramento, Calif.

Hugh D. O'Rourke was made Chicago district sales manager for **Research-Cottrell Inc.**

Wilfred D. MacDonnell was made assistant to the executive vice president on special assignments of **National Steel Corp.,** Pittsburgh. He was assistant manager of Bethlehem Steel Co.'s Johnstown, Pa., plant.

Walt L. Treadwell was made as-

WALTER AHLGRIM

JAMES WINDROSS

Phoenix Mfg. appointments

WILLIAM H. STAPLETON

EDWIN J. FASTER

purchasing posts at Inland Steel

sistant chief engineer, **Pacific Coast Engineering Co.**, Alameda, Calif.

Walter Ahlgrim was promoted to manager, steel mill division, **Phoenix Mfg. Co.**, Joliet, Ill. He was division superintendent. **James Windross** was appointed chief engineer of the company. He was formerly chief plant engineer at Reynolds Metals Co.'s McCook, Ill., plant.

E. Herbert Rose was made chief beneficiation engineer, **Freyn Department**, engineering and construction division, Koppers Co. Inc., Pittsburgh. He was resident engineer for Tennessee Coal & Iron Division, U.S. Steel Corp.

John G. Frischkorn was made assistant sales manager, **Cleveland Tramrail Division**, Cleveland Crane & Engineering Co., Wickliffe, O.

Charles E. Richey was made staff assistant to the vice president and group executive in charge of **Electric Auto-Lite Co.'s** wire and cable and foundry divisions, Toledo, O.

Bruce L. Sutton was named sales manager, **Tatnall Measuring Systems Co.**, Phoenixville, Pa. He was sales manager of Gilmore Industries.

C. F. Hill was made general factory manager, Racine, Wis., plant, **Massey-Harris-Ferguson Inc.**

Veeder-Root Inc., counting devices division, appointed **T. Nelson Jr.** eastern sales manager with headquarters in Hartford, Conn. He covers territory from Cleveland to the Atlantic Coast. **C. Charles Lombardi** was made western sales manager, covering territory from Cincinnati to the Pacific Coast, with headquarters in Chicago.

Elmer L. Young was named head of engineering activities at **Delco Products Division**, General Motors Corp., Dayton, O.

Victor H. Thompson Jr. was named executive vice president in charge of sales of **Worley Steel Co.**, Houston. He was with Mosher Steel Co.

Malcolm A. Jones was made plant engineer at the Fontana, Calif., plant of **Kaiser Steel Corp.** He was assistant chief engineer at the Lackawanna, N. Y., plant of Bethlehem Steel Co.

William F. Ross was named marketing manager of **Ipsen Industries Inc.**, Rockford, Ill., Ipsenlab of Rockford Inc. and Ipsenlab of Canada Ltd. Mr. Ross was formerly manager, industrial furnace division, A. F. Holden Co.

H. J. Kinkade was made manager, **Perfex-Pak Division**, Perfex Corp., Milwaukee.

George C. Meibuhr, chief engineer, was elected vice president-engineering of **Automation Development Corp.**, Mentor, O.

James C. Tappe was named to head **Phoenix Mfg. Co.'s** newly formed reinforcing steel fabricating division, Joliet, Ill. He was manager of the reinforcing steel department of Black Brollier Inc., Houston.

William H. Stapleton fills the new post of general manager of purchases at **Inland Steel Co.**, Chicago. He was purchasing agent at the Indiana Harbor Works and is succeeded by **Edwin J. Faster**, former staff assistant in charge of purchasing research.

Earl F. Warner was named production manager for the new Wixom, Mich., assembly plant of **Lincoln Division**, Ford Motor Co. He was assistant works manager of American Motors Corp.'s assembly plant in Kenosha, Wis.

Charles W. Meyers was appointed director, product planning and development division, sales department, **American Steel & Wire Division**, Cleveland, U.S. Steel Corp.

John E. Wennogle was made general sales manager, **Hubbard & Co.**, Pittsburgh. **Clifford H. Keen** was named division sales manager-northeastern division, with headquarters in New York; **Fred T. Campbell** of the southeastern division, with headquarters at Richmond, Va.; **Frank D. Gibson** of the Atlantic division with headquarters at Philadelphia. **Virgil E. Lown** was named district manager at Salt Lake City, Utah; **A. C. Mowery**, district manager at Portland, Oreg.

Glenn L. Davis was made chief engineer, **Deming Co.**, Salem, O. **Eugene T. Brooks** was made assistant chief engineer; **Louis C. Ospeck**, chief design engineer. Mr. Davis succeeds **Bernard Samelson**, retired.

C. H. Flinn succeeds the late **L. G.**

Pick exactly the right steel for any job from J & L's complete cold finished line

steel whorl production increased 22% with J & L LEADED STEEL

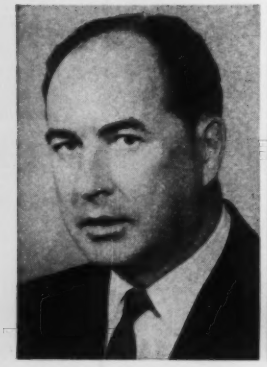
Superior uniformity and machinability of J & L 1113 Leaded Steel enabled this manufacturer to increase production from 110 to 140 pieces per hour. J & L Leaded Steels give you higher cutting speeds, longer tool life, improved finishes. Call your local distributor or write to Jones & Laughlin, 3 Gateway Center, Pittsburgh 30, Pennsylvania.

J&L STEEL

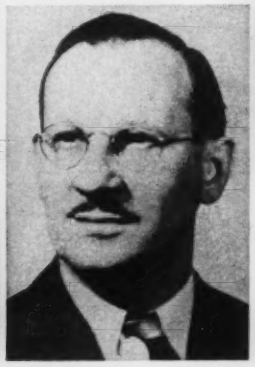
Jones & Laughlin

. . . a great name in steel

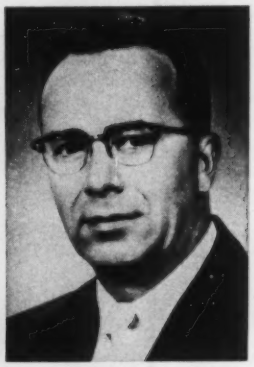
MACHINING PERFECTION always starts with the right steel



THOMAS M. RYAN
Press Automation v. p.

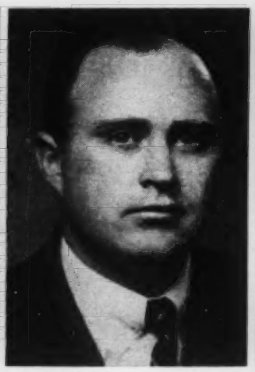


T. HOWARD ADAIR
Atlas Titanium Ltd. mgr.

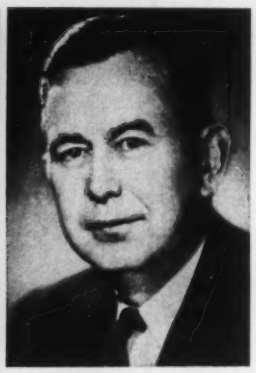


BRUCE KIRSTEN
Fruehauf dir.-purchases

JOHN J. MILLER
Olin Revere alumina mgr.



CENTRE W. HOLMBERG JR.
Holmberg sales v. p.



W. WILFRED GROVES
Yale & Towne mfg. post

Hubbell as manager of the sales-order department, **A. M. Byers Co.**, Pittsburgh.

John J. Miller was appointed general manager, alumina division, **Olin Revere Metals Corp.** The alumina plant is now under construction at Burnside, La. Mr. Miller was in charge of major alumina plants in Canada and India for Aluminum Co. of Canada Ltd. and before joining Olin Revere was assistant chief engineer in charge of chemical engineering for the Canadian firm.

Robert R. Johnson, former assistant to the president of **Standard Steel Corp.**, was elected vice president and general manager of its new subsidiary, Leader Iron Works, Decatur, Ill.

Charles Linduska was named staff assistant to the executive vice president-general manager of **Clearing Machine Corp.**, Chicago, division of U.S. Industries Inc. **John Michelotti** was made director of purchases.

Centre W. Holmberg Jr. was elected vice president-sales, **August W. Holmberg & Co. Inc.**, Flushing, N. Y. He was manager of sales and estimating.

W. Wilfred Groves was promoted to the new post of general manager of manufacturing, lock and hardware division, **Yale & Towne Mfg. Co.**, at White Plains, N. Y. He continues to direct the division's industrial engineering functions and purchasing.

M. L. Talbert was named chief engineer for **Security Engineering Division**, Dresser Industries, Dallas. He replaces **Carl Lichte**, recently appointed to the staff of Turbodrill Division.

Aaron R. Campbell was made superintendent of electronic and experimental airframe fabrications for **Temco Aircraft Corp.**, Dallas.

Dow Furnace Co., Detroit, appointed **James N. Erle Jr.** sales manager; **Henry G. Wille**, chief engineer; **William J. Suvanto**, service manager.

Thomas M. Ryan was named vice president and general manager, **Press Automation Systems Inc.**, Center Line, Mich. He was manager of Sahlin Engineering Co.

Atlas Steels Ltd., Welland, Ont., appointed **Dr. Robert Clark** chief plant metallurgist. He succeeds **T. Howard Adair** who was made manager of Atlas Titanium Ltd., a subsidiary. **D. H. Munro** was made assistant comptroller of Atlas Steels. He was manager of Atlas Titanium, a post he held since formation of the subsidiary over a year ago.

Bruce Kirsten was made director of purchases, **Fruehauf Trailer Co.**, Detroit. He was assistant director of manufacturing.

OBITUARIES...

Sol H. Friedman, 61, founder and president of **Solar Steel Corp.**, Cleveland, died Mar. 14.

Samuel C. Palmer, 59, mechanical superintendent, apparatus service division, **General Electric Co.**, at Buffalo, died Mar. 10.

Otto U. Hofmann, 73, founder of **Otto U. Hofmann & Sons**, Philadelphia, died Mar. 5.

Charles E. Bascom, chairman, **Broderick & Bascom Rope Co.**, St. Louis, died recently.

Felix E. Hall, assistant sales manager, **General Abrasives Corp.**, Niagara Falls, N. Y., died Mar. 8.

William A. Hancock, 50, president, **Acme Tubes Inc.**, Irvington, N. J., died Mar. 9.

J. E. Dahlstrom, 69, a founder and co-owner of **Cortland Machine & Tool Co.**, Cortland, N. Y., died recently.

Robert W. Gothard, 65, assistant superintendent in the foundry of **Erie City Iron Works**, Erie, Pa., died Mar. 4.

William T. Mitchell, 55, vice president, **Leary Owens Machinery Co.**, died recently at Birmingham.

Elmer H. Johnson, 59, president, **Gear Specialties Inc.**, Chicago, died Mar. 11.

Is the Wean "Flying Press"

the fastest press in the world?

WE THINK IT IS. While our top speeds have stayed around 600 strokes per minute on the "flying press," the size of piece is not restricted to washers and the like which are made on other high speed presses.

For example, where conventional presses rarely can process more than 100 feet of metal per minute, the "flying press" has performed at speeds in excess of 300 feet per minute.

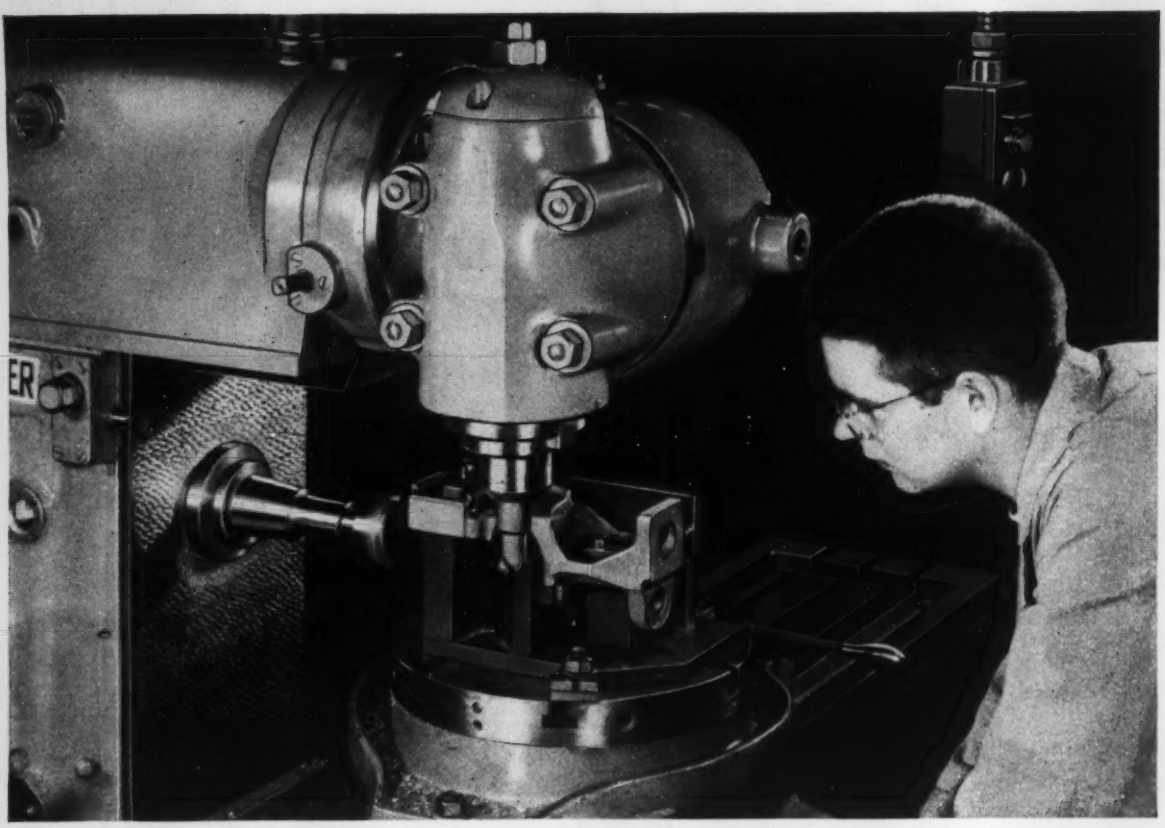
One new model, for instance, blanks automotive assemblies 8 feet long at 45 per minute.

Yet, the "flying press" has other major advantages for you. Despite its revolutionary construction, it requires up to 20% less maintenance than other presses — it has no brake or clutch to wear. And, because of almost perfect dynamic balance, the press can be floor mounted.

We could write a book about the features of the Wean "flying press" — in fact we have. It's soon to be released . . . and it's yours for the asking. Write to the address below. We will mail your copy of the Wean "Flying Press" brochure as soon as it comes from the printers.

Wean Equipment Corporation

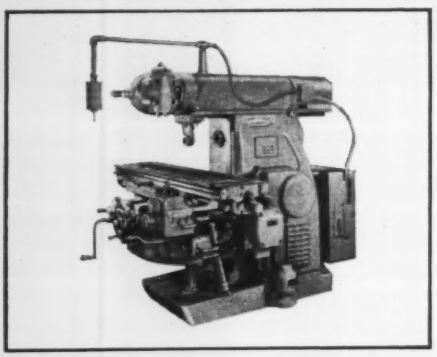
CLEVELAND 17, OHIO



Horizontal Milling... Four-bladed face mill performs four horizontal milling operations on magnesium casting. Simple fixture on rotary table holds workpiece. Four milling positions accomplished through indexing of rotary table.

Vertical Milling . . . using a carbide two-lip end mill in the ram head spindle, three vertical milling operations are completed without disturbing the setup. Rotary table is used for indexing the workpiece.

Multiple setups and excessive handling eliminated



10hp No. 3 Model CH, Plain style Ram Head milling machine with Mono-Lever and Automatic Cycle Table Control and Type U Universal Head.

Kearney & Trecker Ram Head Milling Machine completes seven operations without removing workpiece

Kearney & Trecker's new line of Ram Head milling machines combines a conventional horizontal spindle and a self-contained motorized sliding ram. As a result, horizontal and vertical spindles can be run separately and simultaneously.

The Ram Head machines are available with a choice of three heads—Universal, Vertical and Quill types which can be rotated through 360°. You can perform vertical, horizontal and angular milling on one machine *in a single setup.* They are built in No's. 2, 3, and 4 sizes in both plain and universal styles. Plain machines may be optionally equipped with Mono-Lever and Automatic Cycle Table Control.

For the full story, contact your nearest Kearney & Trecker representative, or write Kearney & Trecker Corp., 6790 W. National Ave., Milwaukee 14, Wis.

KEARNEY & TRECKER MILWAUKEE

Designers and Builders of Precision and Production Machine Tools Since 1898

ATLANTA, GA.
Scott Machine Tool Co.
411 Williams St., N.W.

BIRMINGHAM, ALA.
George M. Meriwether
Industrial Equipment
1712 Seventh Ave. North

BOSTON, MASS.
Stedfast & Roulston, Inc.
11 Deerfield St.

BUFFALO 23, N.Y.
Syracuse Supply Co.
1965 Sheridan Drive

CHARLESTON, W. VA.
Wm. S. Bolden Co., Inc.
MacCorkle Ave.

CHATTANOOGA, TENN.
Scott Machine Tool Co.

CHICAGO, ILL.
Jackson-Fotsch Co.
7350 West Lawrence Ave.

CINCINNATI, O.
The E. A. Kinsey Co.
327-335 W. Fourth St.

NEW YORK, N. Y.
Kearney & Trecker Corp.
409 Grand Ave.
Englewood, New Jersey

NEW ORLEANS, LA.
Stauss & Haas, Inc.
524 Camp St.

OMAHA, NEB.
Fuchs Mach. & Supply Co.
2401 N. Eleventh St.

PHILADELPHIA, PENN.
Machinery Assoc., Inc.
325 E. Lancaster Ave.
Wynnewood, Penna.

PITTSBURGH, PENN.
Kearney & Trecker Corp.
4 West Manilla Ave.

PORTLAND, ORE.
Harry M. Euler Co.
2811 N.E. Gilsan St.

RICHMOND, VA.
Smith-Courtney Co.
Seventh & Bainbridge Sts.

For details, contact these
KEARNEY & TRECKER DISTRIBUTORS
or write to
KEARNEY & TRECKER CORP.
6790 W. National Ave., Milwaukee 14, Wis.

CLEVELAND, O.
Kearney & Trecker Corp.
Euclid Ave. & E. 17th St.

COLUMBUS, O.
The E. A. Kinsey Co.
1020 W. Fifth St.

DALLAS, TEX.
Greene Machinery Co.
6300 Wyche Blvd.

DAYTON, O.
The E.A. Kinsey Co.
16 Washington St.

DENVER, COLO.
F. J. Leonard Co.
1219 California St.

DETROIT, MICH.
Kearney & Trecker Corp.
10600 Puritan Ave.

GREENSBORO, N. C.
Smith-Courtney Co.
239 S. Davie St.

HICKORY, N. C.
Smith-Courtney Co.
103 3rd Street, S.W.

HOUSTON, TEX.
Steel & Machine Tool Sales
6414 Navigation Blvd.

INDIANAPOLIS, IND.
The E. A. Kinsey Co.
1550 Stadium Drive

KANSAS CITY, MO.
Blackman & Nuetzel
Machinery Co.
1103 E. Armour Blvd.

LOS ANGELES, CALIF.
Moore Machinery Co.
3200 S. Garfield Ave.

MILWAUKEE, WIS.
Kearney & Trecker Corp.
6784 W. National Ave.

ROCHESTER 4, N. Y.
Syracuse Supply Co.
311 Alexander Street

ST. LOUIS, MO.
Blackman & Nuetzel
Machinery Co.
3713 Washington Ave.

ST. PAUL, MINN.
Sales Serv. Mach. Tool Co.
2363 University Ave.

SALT LAKE CITY, UTAH
Todd Machinery Co.
4165 Holloway Drive

SAN FRANCISCO, CAL.
Moore Machinery Co.
7th & Carleton-Berkeley

SAN JOSE, CALIF.
Moore Machinery Co.
656 Stockton Ave.

SEATTLE, WASH.
Dawson Mach. Co.
5700 First Ave., S.

SHREVEPORT, LA.
Peerless Supply Co., Inc.
701 Spring St.

SYRACUSE 1, N. Y.
Syracuse Supply Co.
314-332 W. Fayette St.

TULSA, OKLA.
White Star Mach. Co.
104 Boulder Bldg.
19 West 10th Street

WICHITA, KAN.
White Star Mach. Co.
301 N. St. Francis

CANADA
MONTREAL
OTTAWA
QUEBEC
TORONTO
WINDSOR
Williams & Wilson Ltd.

Form Vaculloy Corp.

Wooster, O., firm is vacuum melting titanium, steel and alloys by improved technique

VACULLOY CORP., Wooster, O., is the newest entry in the rapidly expanding field of vacuum melting. It is melting titanium, steel and alloys for research, laboratory and development purposes. The firm uses its own version of the consumable electrode double melting technique.

It was organized recently by J. H. Johnston, president, and E. R. Funk, vice president and treasurer. Both have had extensive experience in the melting and fabrication of titanium, steel and alloys through their association with Johnston & Funk Titanium Corp., Wooster, one of the pioneer producers of titanium wire. David A. Funk is secretary. B. R. Riffee is plant manager.

Plan Joint Titanium Venture

Firth Sterling Inc., Pittsburgh, and Oregon Metallurgical Corp., Albany, Oreg., have reached a joint agreement to produce and process titanium bars and forged rounds. Firth Sterling will process ingots produced by Oregon Metallurgical into mill products. They will be used in making support rings, compressor wheels, compressor blades and other jet engine components, as well as airframe parts.

Oregon Metallurgical Corp. will produce ingots (10 to 22 in. in diameter) from titanium sponge by the consumable electrode vacuum melting process.

Los Angeles Firm Expands

American Pipe & Construction Co., Los Angeles, will construct a $225,000 building to increase its production 40 per cent.

Will Build Steel Drum Plant

Steel Container Corp. is building a steel drum plant in the Port of Tacoma Industrial District, Tacoma, Wash. The $750,000 plant will start operations about June 1. The firm was organized recently by Arne Strom and Sidney Leven. Richard Warner is president and general manager. David R. Lee is sales manager.

Trane Enlarges Scranton Unit

Trane Co., La Crosse, Wis., will build a 23,000 sq-ft addition to its Eastern Division plant at Scranton, Pa. It will be used for the production of a steam specialty line, including radiator traps and valves.

Buys Building Site in Texas

Continentai Can Co. Inc.'s Robert Gair Division acquired a plant site in Tyler, Tex., for a corrugated shipping container plant.

Graco Opens Georgia Branch

Graco Steel Co., Louisville, opened offices and warehouse facilities at 356 Sessions St., Marietta, Ga. Facilities similar to those at the Louisville warehouse are being installed: A 48-in. slitting line, a 48-in. leveling and cutoff line, and a battery of squaring shears.

Servomechanisms To Build

Servomechanisms Inc., New York, will construct a plant in Westbury, Long Island, N. Y. It will contain a laboratory, model and model-prototype shops and precision manufacturing and production machine facilities. The company makes electronic and electromechanical subsystems, computers and components.

Jensen Specialties Renamed

Jensen Specialties Inc. changed its name to Jensen Inc. The Detroit firm makes industrial ovens and conveyors.

Offers Reclamation Service

Castor Engineering Co., Carnegie, Pa., established a new metal reclamation service for electrical manufacturers and others that work with electronic components. Germanium, platinum, gold, molybdenum, nickel and copper may be recovered from various types

(*Please turn to page* 88)

Mr. John S. Lea, Vice President, Kelley Manufacturing Company, Houston, Texas, reports:

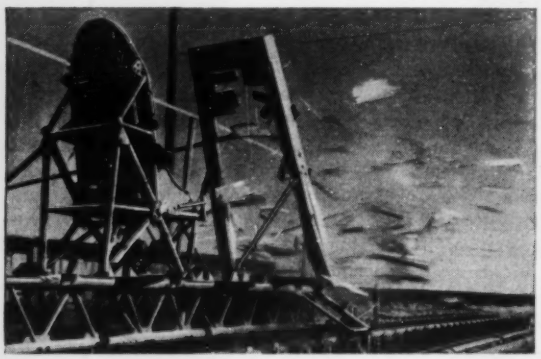
"Republic Electro Paintlok® forming and application

"Republic Electro Paintlok is the ideal material for one of our major product lines, acoustical fastening members," continues Mr. Lea. "Fabricating the sheet into H and Z members, splines, angles and couplers requires extreme forming and bending. We know from past experience that the special coating on Republic Electro Paintlok won't crack, flake or peel off no matter what we do. This means that after painting and installation, Kelley Acoustical Fastening Members provide our customers maximum satisfaction almost indefinitely, with little or no maintenance at all."

This example is typical of the improvement made possible in an endless variety of products through the use of Republic Electro Paintlok. In addition, this versatile sheet often allows substantial savings in production time and money because it is shipped from the mill in prime condition for painting. In many cases only the final finish need be applied to provide full protection and attractive appearance. Cleaning and priming may be eliminated.

Finally, the chemically treated zinc surface of Electro Paintlok retards corrosion even when scratched through, and effectively limits it to the point of damage.

Get all the facts on this versatile sheet steel product and how it can help solve your forming and application problems. Simply contact your Republic representative or mail coupon.



STRUCTURAL APPLICATION PROBLEMS requiring low weight plus high strength are best solved using tubular construction. A good example is this rocket sled designed to withstand extreme forces of abrupt deceleration. Republic ELECTRUNITE® Steel Mechanical Tubing is ideal for such an application. Uniform in wall thickness, concentricity, strength and ductility, it permits reduction in bulk without sacrifice of safety. Send coupon for data.

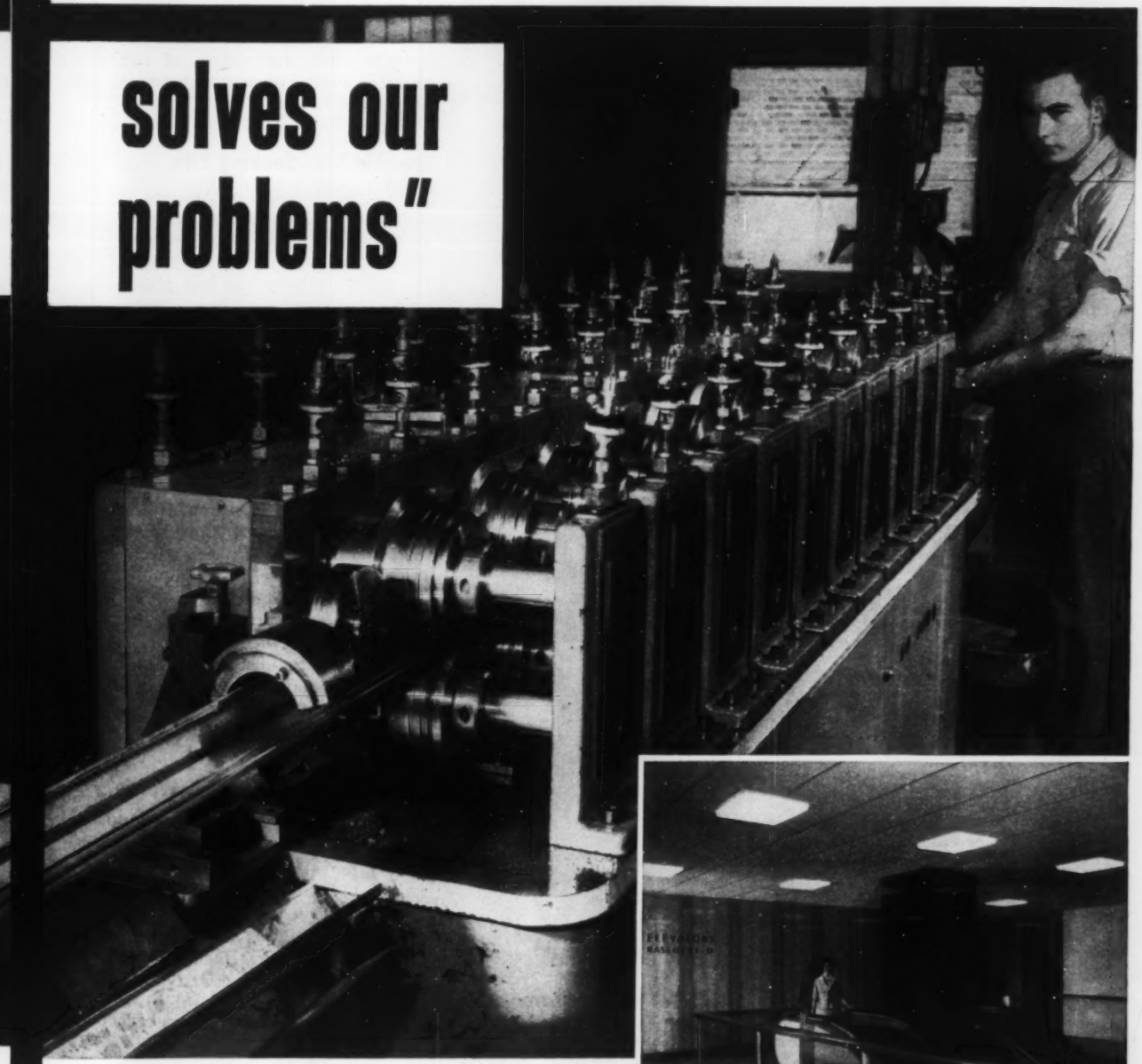
CORROSIVE APPLICATION PROBLEMS, like this coal-cleaning plant disc-type filter unit, demand the strength and corrosion resistance of Republic ENDURO® Stainless Steel. Here the stainless steel cloth used to cover disc segments is not only much more durable, but more than twice as efficient in recovering coal "fines" as the cotton cloth formerly used. To be sure of the best, specify ENDURO.

REPUBLIC

REPUBLIC STEEL

World's Widest Range of Standard Steels

solves our problems"



TYPICAL APPLICATION of Kelley Acoustical Fastening Members is shown in the ceiling at right. Base metal is Republic Electro Paintlok. Its special coated surface grips paint tightly, assuring years of maintenance-free good looks. Even severe forming, like the operation shown above, has no effect on its outstanding paint-holding characteristics. Coating will not crack, flake or peel off.

STEEL

and Steel Products

REPUBLIC STEEL CORPORATION
Dept. C-3071
3120 East 45th Street
Cleveland 27, Ohio

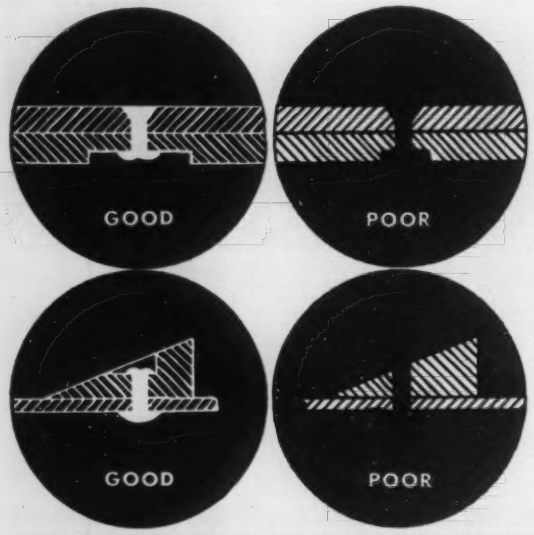
Please send me more information on:
☐ Electro Paintlok ☐ ENDURO Stainless Steel
☐ ELECTRUNITE Mechanical Tubing

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____



TIPS ON USING RIVETS

A short design course guaranteed to save a lot of grief later on!

You could memorize these and thousands more design tips on the best use of rivets—but don't! Much simpler to call on Milford for the right answers to all your riveting design and application problems. Full-tubular, semi-tubular, split, cutlery, decorative—Milford makes them all from any metal that can be cold-formed, then adds a wide variety of platings and finishes.

To improve product appearance and strength
. . . to take full advantage of automatic assembly
. . . to cut delivery time and production costs
—get in touch with Milford first!

THE MILFORD RIVET

MILFORD RIVET & MACHINE CO.

MILFORD, CONNECTICUT • HATBORO, PENNSYLVANIA
ELYRIA, OHIO • AURORA, ILLINOIS • NORWALK, CALIF.

(*Concluded from page* 85)

of processing scrap and from components and assemblies of all kinds, including diodes, transistors or crushed tubes.

Crucible Gets Soaking Pits

Crucible Steel Co. of America is installing two, three-hole, rectangular soaking pits with recuperators at its Midland (Pa.) Works. The contract for them was placed with Salem-Brosius Inc., Pittsburgh. They are scheduled for completion late this year and will have a rated capacity of 288,000 tons a year.

Kaiser Orders Furnace

Salem-Brosius Inc., Pittsburgh, has received an order from Kaiser Aluminum & Chemical Corp., Oakland, Calif., for a large roller hearth type furnace to be installed at the Ravenswood, W. Va., rolling mill. The furnace is 413 ft long, including the spray quench and the charge-discharge tables. It is a radiant-tube, convection heated furnace for heat treating aluminum alloy plates.

Consolidates Fabricating Work

Magnesium Co. of America has started to produce aluminum trucks and other aluminum products at its East Chicago, Ind., plant and has discontinued operation of its fabricating facilities at El Segundo, Calif. The company plans to distribute its magnesium and aluminum material handling equipment exclusively through material handling dealers.

Vickers Inc. Decentralizing

Vickers Inc., Detroit, has established four additional operating divisions in its continuing program of decentralization. Each division has its own engineering, manufacturing, marketing and service facilities. B. W. Badenoch is general manager and J. T. Burns, general sales manager of the Aero Hydraulics Division. M. A. Hayden is general manager and W. F. Driver, general sales manager of the Machinery Hydraulics Division. Ray Conner is general manager and Al Lane, general sales

Does your **Cylindrical** *problem call for a* **Centrifugal** *solution?*

If your product plans call for hollow cylindrical parts, give some thought to these facts. Manufacturers who had never seriously considered cast parts before are discovering important advantages in Sandusky centrifugal castings.

They're getting exceptional resistance to heat, corrosion, abrasion and stress, through the use of special alloys cast centrifugally . . . in diameters from 7″ to 54″, and lengths to 33 feet depending on diameter . . . and specially machined to specifications.

How can our versatile staff and facilities help you? Tell us your product requirements. Let us explore your ideas. Perhaps we can help solve your cylindrical problems through the vast foundry experience, metallurgical research and machining skills our 46 years offer.

Your request will bring more information promptly . . . or, if you prefer, a personal call by one of our engineers. Sandusky Foundry and Machine Company—Sandusky, Ohio.

Sandusky centrifugal castings offer you 4 important advantages:

1. ***SUPERIOR STRENGTH***—through non-directional mechanical properties
2. ***BETTER QUALITY***—machined castings are porosity-free
3. ***UNIFORM SOUNDNESS***—harmul inclusions are forced out by spinning motion
4. ***JOB-READY FINISHED CASTINGS***—reach you machined exactly to your specifications . . . eliminating extra costs from rejects, down-time, loss of production, etc.

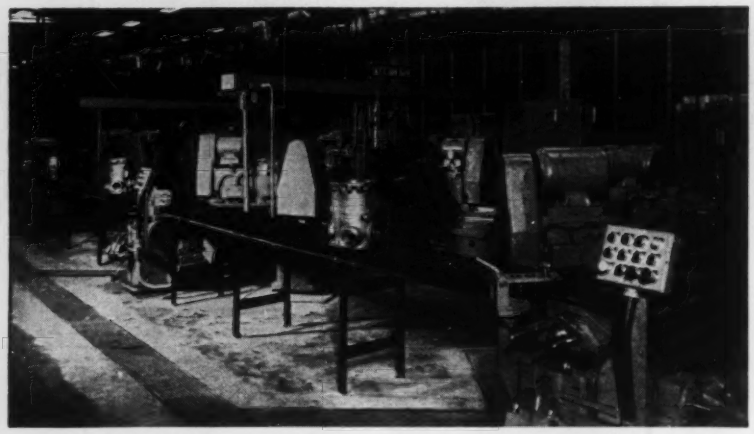
See Our Booth #1339 at the Design Show

Sandusky Centrifugal Castings

Stainless steels—plain carbon and low alloy steels—wide variety of copper base compositions

Ask Standard

how to cut costs with conveyors



Standard gravity roller conveyors like this are modest in cost, easy to install and maintain.

Conveyor system helps Airtemp up compressor parts production 40%

To handle stepped-up demands for residential and industrial air conditioners, the Airtemp Division of the Chrysler Corporation undertook an extensive re-tooling program. On one compressor crankcase line, for example, they installed 17 new machine tools . . . connected them all with Standard gravity roller conveyors. Result — two hours saving per case, production up 40%.

If you're planning on modernizing or retooling it will pay you, too, to find out how Standard conveyors can complement new equipment . . . give you lower overall costs and greater productive efficiency. STANDARD CONVEYOR COMPANY, North St. Paul 9, Minnesota. Sales and Service in Principal cities.

To expedite shipping or stocking and reduce handling costs, investigate Standard lightweight portable roller conveyors (right) or the portable, self-powered HANDIBELT conveyor (left), which can be used horizontally or at varying incline or decline angles.

For details — contact the Standard representative listed in the classified phone book or write direct. Ask for Bulletin Y-3.

Standard 50 years of conveyor experience

GRAVITY & POWER CONVEYORS

manager of the Mobile Hydraulics Division. The new International Division is headed by R. E. Esch.

J&L Realigns District Setup

Jones & Laughlin Steel Corp.'s district sales office in New Orleans is now an operation separate from its warehouse in that city. Headquarters for the district sales office, headed by L. H. Krieger, now are in the Delta building. The warehouse continues its operations at N. Miro and Japonica streets. It is managed by Frank M. Harbison.

Forms Hydraulic Controls Unit

North American Mfg. Co., Cleveland, organized a Hydraulic Controls Division. H. E. Neville is manager; C. E. Hague, director of engineering; H. N. Helm, application engineer.

Moves Extrusion Die Operations

Permanent Mold Die Co. Inc., Hazel Park, Mich., has established its extrusion die operations at 5749 Beebe Ave., Warren, Mich. The extrusion die plant will be called the PMD Extrusion Die Co.

Gillette Gets Kanigen License

General American Transportation Corp., Chicago, licensed Gillette Co., Boston, to use its patented Kanigen process for chemical nickel plating. With it, a uniformly controlled coating of high nickel, low phosphorus alloy can be deposited on almost any product or part of a product, regardless of shape.

Phoenix Electrifies Mill

Phoenix Iron & Steel Co. has completed conversion from steam drive to electrical operation of its 126-in. plate mill at Harrisburg, Pa. In addition, the plant has been expanded with the installation of an open hearth furnace which was first tapped in December. It has an estimated capacity of 75,000 tons a year. Electrification, combined with certain mill improvements, makes possible the rolling and shearing of steel plate up to 12,500 lb, twice the weight the mill pre-

What are your refractory castable problems ?

- High Temperatures?
- Abrasion and Erosion?
- Slag Attack?
- Overhead Applications?
- Insulating Properties Required?

B&W makes a wide range of specialized refractory castables. Whatever your problem, you will find helpful data in B&W Bulletin R-35. Send for your copy today.

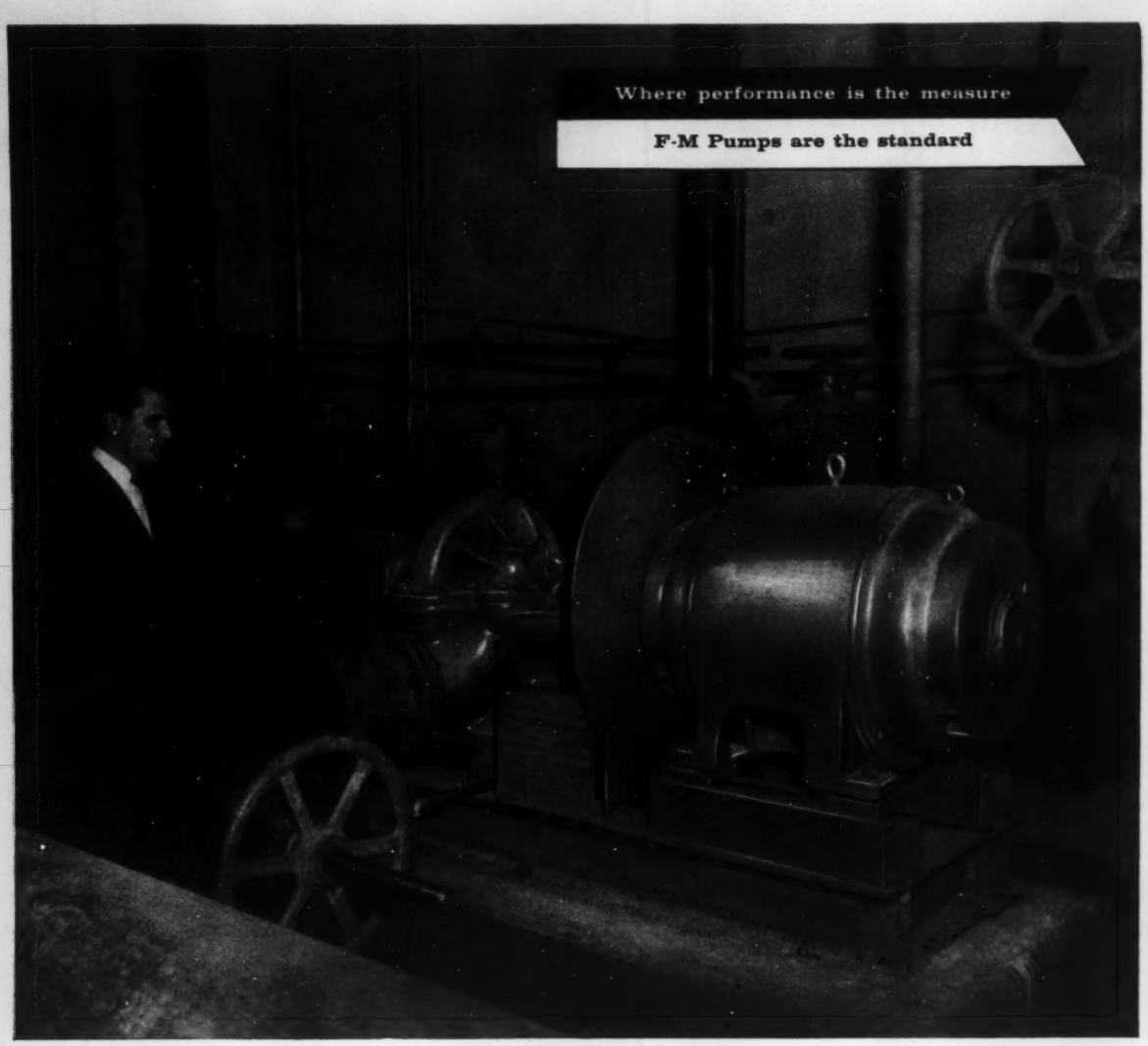
Table of Products and Uses

	Page
Castables	
B&W Kaocrete-32 — Special High Temperature Service—To 3200 F	7
B&W Kaocast — High Temperature, General Purpose Use—To 3000 F	8-9
B&W Kaocrete-A — General Purpose Use—To 2700 F	10-11
B&W Kaocrete-B — For Ease of Plastering in General Purpose Use—To 2300 F	10-11
B&W Kaocrete-D — For Extra Strength and Abrasion Resistance—To 2500 F	10-11
B&W Kromecast — Chrome-base Castable for Resistance to Attack of Slag and Other Reactive Products—To 3100 F	12
B&W Hydrochrome — Chrome-base Castable for Resistance to Attack of Slag and Other Reactive Products—To 2800 F	12
Insulating Concrete-Mixes	
B&W Kaolite-20 · Kaolite-20-Gun **B&W Kaolite-22 · Kaolite-22-Gun** — For Castable Convenience Plus Insulating Effect	13

BABCOCK & WILCOX

THE BABCOCK & WILCOX CO.
REFRACTORIES DIVISION
GENERAL OFFICES: 161 EAST 42nd ST., NEW YORK 17, N.Y.
WORKS: AUGUSTA, GA.

B&W REFRACTORIES PRODUCTS: B&W Alfrax Firebrick • B&W 80 Firebrick • B&W Super Firebrick • B&W Insulating Firebrick • B&W Refractory Castables, Plastics and Mortars • B&W Silicon Carbide



Fairbanks-Morse 6″ dual-driven fire pump in jet engine testing laboratory.

Standby against 3500 degrees!

Full power testing of Navy jet engines creates exhaust heat up to 3500° F. a few feet from highly inflammable fuel—a constant fire hazard when in the confines of the testing laboratory.

To insure positive protection against fire losses, Thompson Products Gas Turbine Laboratory, Perry, Ohio, has installed a sprinkling system with a Fairbanks-Morse 6″ dual-driven fire pump—capable of pumping 1500 gallons per minute. The installation is so dependable, so positive that prompt approval was given by the authorities having jurisdiction.

Don't gamble with the heart of your fire-prevention equipment; insist on F-M pumps with F-M power. See your F-M Field Engineer for expert assistance, or write Fairbanks, Morse & Co., Department S-3-25, 600 South Michigan Avenue, Chicago 5, Illinois.

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

PUMPS • SCALES • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • RAIL CARS • HOME WATER SERVICE EQUIPMENT • MOWERS • MAGNETOS

viously handled. New facilities include the installation of new run-out tables and slab handling facilities.

A. M. Castle Building

A. M. Castle & Co., steel distributor, is building general offices and a warehouse at 3400 N. Wolf Rd., Franklin Park, Ill. Total space: 408,340 sq ft.

IBM Continues To Expand

International Business Machines Corp., New York, will establish a manufacturing unit for its recently formed Data Processing Division in Essex Junction, Vt. The firm has leased a 40,000 sq-ft plant for the manufacture of data processing machine components.

IBM also announced that it will expand its Owego, N. Y., plant by constructing a second engineering building (about 100,000 sq ft) and by adding about 58,000 sq ft to the administration building.

Binks Opens Branch Office

Binks Mfg. Co., Chicago, opened a branch office, warehouse and service center at 196 14th St. NW, Atlanta. The firm makes spray painting equipment for industrial finishing. C. E. Fuller is manager of the Atlanta branch.

New England Firm Buys Plant

New England Metallurgical Corp., Boston, is taking over the plant formerly owned by American Brake Shoe Co. in Norwood, Mass., and will operate it as a division. New England Metallurgical specializes in metal processing and manufactures heat treating furnaces and other special equipment used by the metal industry.

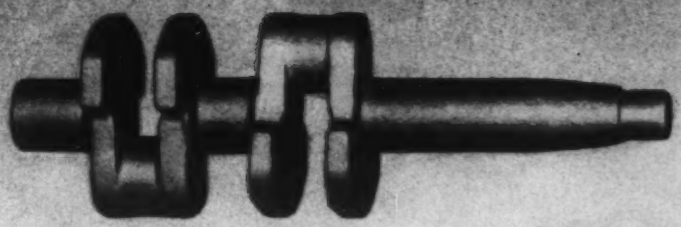
Barden Builds Research Center

Barden Corp., Danbury, Conn., manufacturer of precision ball bearings, has completed construction of a new research facility. The building is a series of chambers within chambers, the innermost of which have closely controlled atmospheres. Other facilities include

(*Please turn to page* 96)

How often do you find a flaw in a coin?

...or in a FORGING?



(Both are made by the same basic process)

When closed impression dies strike a coin, or hammer out a forging, they produce a result that gives specific advantages — **freedom from concealed flaws, closeness to tolerance, strength without bulk, superior resistance to impact and fatigue stresses.** These advantages mean fewer part rejects, greater overall economy, better product dependability and performance. These advantages are all found in forgings, **the metal you can trust.**

Do you have a part design problem? Are you now purchasing parts, made by other processes, which require extra metal to provide strength? Are you using weldments, or fabricated assemblies? You will find that often forgings can eliminate extras, and yet give you quality-plus advantages.

Make it a point to call in a forging engineer to learn more about how up-to-date methods and techniques of forging can help to reduce your products or part cost.

Reduce your cost by using forgings. Send for booklets, ☐ "What is a Forging?" and ☐ "Management Guide to the Use of Forgings."

closed-die **forgings** for metal you can trust

DROP FORGING ASSOCIATION

Dept. S. 419 S. Walnut St., Lansing, Mich.

Symbolic emblem of the Drop Forging Association

A Boeing B-47 Stratojet medium bomber gets a take-off assist from 30 Phillips Petroleum Company M15 JATOs.

N-A-X HIGH-TENSILE is readily formed and welded. Here, before welding, a worker sizes the container's aft head, drawn by a 250-ton press. Bottom forging is locked in.

N-A-X HIGH-TENSILE STEEL FORMS AND WELDS READILY

Formability: Even at the higher strength levels (50% greater than mild carbon steel) this material can be cold formed and drawn into very difficult stampings and cold formed shapes.

Weldability: Its weldability by any process is excellent, maintaining toughness through a wide range of temperatures. Under-bead cracking tests are excellent. Using American Welding Society standard bead-weld testing, shows under-bead hardness rises only to 95 Rockwell from 80-85 Rockwell prior to welding.

Make *your* product better, too—
with this high-strength steel

How N-A-X® HIGH-TENSILE STEEL

supplied the money-saving answer to a critical take-off problem

JATO rockets boost heavily laden planes into the air faster, let them operate from shorter runways. A new JATO developed by Phillips Petroleum Company required a case that would endure a pressure of 1,000 pounds per square inch at the high blast temperatures. Yet it must be lightweight, easily fabricated, economical.

In 1954, 100 JATO cases of N-A-X HIGH-TENSILE steel were tested at Air Force Plant 66 near McGregor, Texas, where Phillips Petroleum is contractor-operator.

Result: The N-A-X HIGH-TENSILE case passed every test with flying colors. It *surpassed* the required standards for strength by as much as 20 percent.

The high-strength characteristics that make N-A-X HIGH-TENSILE a better steel for JATO fuel containers also make it better for many other types of pressure containers, where high strength and lighter weight are equally important. It is particularly suitable for Propane cylinders and pressure vessels for the chemical, automotive and oil industries, that must withstand severe interior pressures and handling abuses . . . and for such products as truck and trailer frames, wheels and bumpers, railroad and earth-moving equipment, shipping containers, pipe, and many others.

Other Important Advantages: N-A-X HIGH-TENSILE STEEL, compared with carbon steel, is 50% stronger • has high fatigue life with great toughness • is more stable against aging • is more resistant to atmospheric corrosion. It polishes to a high luster at minimum cost • has greater resistance to abrasion or wear • offers greater paint adhesion.

With N-A-X HIGH-TENSILE you can design longer life, strength with lightness, and economy into your products. Let us show you how.

COMPANION HIGH-STRENGTH STEEL IN THE N-A-X FAMILY

N-A-X FINEGRAIN. A low-alloy high-strength steel ideally suited for applications where the enhanced resistance to atmospheric corrosion of N-A-X HIGH-TENSILE is not required.

N·A·X
HIGH-TENSILE STEEL

N-A-X Alloy Division
GREAT LAKES STEEL CORPORATION
Detroit 29, Michigan — Division of
NATIONAL STEEL CORPORATION

N-A-X Alloy Div., Dept. B, Great Lakes Steel Corp., Detroit 29, Mich. B-1

☐ Please send me 8-page illustrated technical catalog on N-A-X HIGH-TENSILE Steel.

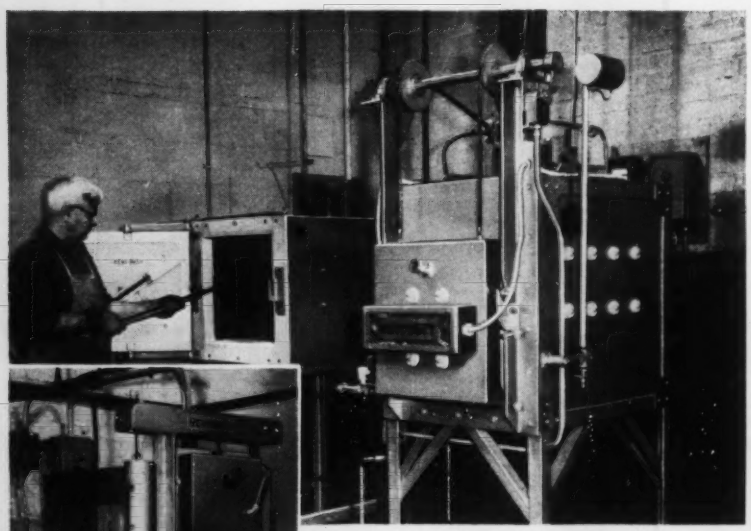
☐ Please have your representative contact me.

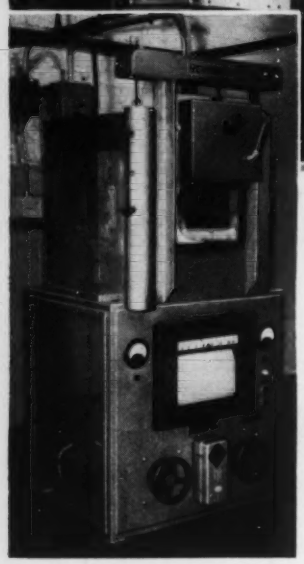
Name_____ Title_____

Company_____

Street_____

City_____ Zone_____ State_____





HEVI-DUTY Tool Room Combination provides *"More Versatility... Greater Uniformity"* at argus cameras.

Argus uses these Hevi-Duty Furnaces for all heat treating operations on their tools, dies, gauges, and castings. Carl Bates, Tool Room Foreman, reports, "These furnaces provide uniformly good results on all operations, high temperature and low. We have used them for hardening, tempering, drawing, normalizing, and pack carburizing and have found them completely dependable."

The Argus Tool Room Combination consists of:—

1. **Hevi-Duty Multi-Range Box Furnace, used for hardening, drawing, normalizing and pack carburizing. A high speed fan combines with five sided heat to provide even temperatures to 1800° F. throughout the work chamber.**
2. **Hevi-Duty "Hi-Treet" Globar Furnace, used for hardening high speed steel at temperatures up to 2500° F.**
3. **Hevi-Duty "Temperite" Box Air Draw Furnace, used for low temperature drawing and tempering. High speed fan and baffle assures uniform distribution of heat throughout the furnace chamber.**
4. **Hevi-Duty Endothermic Generator provides a controlled atmosphere keeping the high speed steel from oxidizing and decarburizing.**

These furnaces combine to give the best in both high and low temperature operations. If you want to discover how to modernize your tool room, write for Bulletin 1147-ER today.

HEVI-DUTY ELECTRIC COMPANY

MILWAUKEE 1, WISCONSIN

Heat Treating Furnaces... Electric Exclusively

Dry Type Transformers ***Constant Current Regulators***

(*Concluded from page 93*)

assembly rooms, machine shop, metallurgical laboratory and engineering and drafting offices.

ASSOCIATIONS

Steel Founders' Society of America has elected these officers: President, H. F. Park Jr., General Steel Castings Corp., Granite City, Ill.;

H. F. PARK JR.
Steel Founders' president

vice president, B. P. Hammond, Blaw-Knox Co., Pittsburgh; treasurer, R. G. Parks, National Malleable & Steel Castings Co., Cleveland. Members of the society's permanent staff were re-elected: Executive vice president and secretary, F. K. Donaldson; technical and research director, C. W. Briggs; market development director, G. K. Dreher; and assistant secretary, Erwin Dieckmann.

Award winners included H. D. Phillips, Adirondack Foundries & Steel Inc., Watervliet, N. Y., who won the technical and operating gold medal; A. M. Slichter, Pelton Steel Casting Co., Milwaukee, who won the Lorenz memorial gold medal; Dr. Edward Hucke, University of Michigan, who won first prize in the Lillieqvist steel foundry facts awards; and Norman Koch, Grede Foundries Inc., Milwaukee, who won the second Lillieqvist prize.

JESSOP

STEEL COMPANY • WASHINGTON, PA.

OFFICES IN PRINCIPAL CITIES

Jessop Steel of Canada Limited, Wallaceburg, Toronto

Jessop Steel International Corp., Chrysler Building, New York, New York

You buy near-perfection when you specify this Jessop steel

If you visit the Jessop Specialties Division, you'll be immediately impressed with the clean, quiet lab-like atmosphere, the intensity of effort and care that personifies true craftsmanship. For here Jessop processes fine *Truform* oil or *Windsor* air hardening tool steel into one of its top products . . . precision ground flat stock used for the production of highly accurate dies, gages, cutters, machine parts, straight edges or the like. This Jessop product comes as close to perfection as the steelmaker's art logically allows. Each piece, of any size, is highly-finished, dead flat and square, and guaranteed to have a thickness tolerance of plus or minus .001 and a width tolerance of plus .005, minus .000. An inspector double checks the analysis with a delicate Magnetic Analysis Production Comparator and a Profilometer is used for inspection of the finish. After all tests are passed, the stock is carefully wrapped for shipment to Jessop customers all over the world. If you have any application for this type of product, it will pay you to send in an inquiry. Jessop's pride of accomplishment will make it a better buy for you.

the heart of the jet . . .

— DEPENDABLE FORGINGS —

Ever since the beginning of the development of mechanical power, the heart of power producing machinery has been forgings.

The latest development in the field of mechanical power is the aircraft turbo-jet engine. Here again, the important highly stressed components — the turbine wheels and the compressor discs — are forgings and here also more of these forgings are produced by Wyman-Gordon than by any other company.

Entirely new problems, mechanical and metallurgical, are involved in the production of these vital parts — problems which require the maximum in experience, know-how and research facilities. Wyman-Gordon excels in all of these areas and continues today as for nearly 75 years in the forefront of new forging developments.

Seen through the porthole of this compressor disc is the finished forging — an example of the ultimate in quality and precision.

WYMAN-GORDON COMPANY

Established 1883

FORGINGS OF ALUMINUM • MAGNESIUM • STEEL • TITANIUM

WORCESTER 1, MASSACHUSETTS

HARVEY, ILLINOIS • DETROIT, MICHIGAN

Technical Outlook

CLAD REACTOR PIPING—Designers of nuclear power plants can make considerable savings by using clad steel instead of costlier high alloy material for heavy wall piping. Joseph H. Proctor, Lukens Steel Co., Coatesville, Pa., made the observation at the recent Nuclear Engineering & Science Conference in Philadelphia. It's based on studies made by Lukens which considered service conditions and fabrication methods.

MORE NUCLEAR CONGRESS NOTES— Ceramic fuel elements which have the oxidation resistance of ceramic ware may offer the key to high temperature, direct process heat reactors. They may be built sooner than many expect.

- Daystrom Nuclear Division, West Caldwell, N. J., is introducing a package deal for companies interested in researching certain uses of nuclear energy. It includes a low cost nuclear research reactor as training program.
- Allis-Chalmers presented an analysis of requirements for coolant pumps for present and future atomic installations.

ALUMINUM JOINING— A new high temperature soldering method for aluminum makes use of the abrasive properties of a glass fiber brush. No corrosive flux is needed because the brush effectively pre-tins the surface.

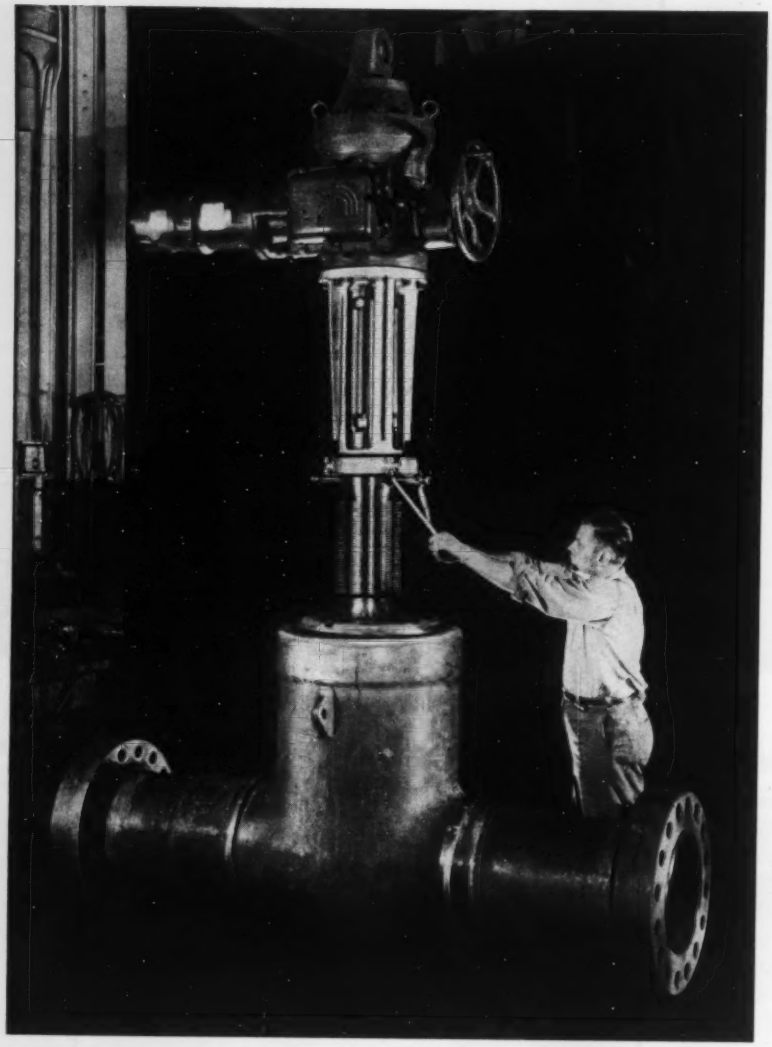
REMOTE CONTROL— A system with a range of several hundred miles will send and receive coded signals which control complex processes. Telephone and telegraph lines or VHF and microwave radio bands are used. Transmitting questions, reports and commands, the system is controlling pipelines, measuring and recording liquid levels in tanks, observing and recording weather data. Coded commands can be translated into action, such as automatic positioning of shafts, switching of motors, pumps and valves. Bendix Aviation Corp. built the system.

URANIUM RECOVERY—Solvent extraction will become more important in uranium recovery, predicts James D. Moore, chief process engineer, Vitro Uranium Co., Salt Lake City, Utah. Speaking before the annual meeting of AIME in New Orleans, he said the process offers a more economical and efficient method of taking uranium out of acid treated ores. One solvent which has shown promise in pilot plant tests is dodecyl phosphoric acid in kerosene.

SAFETY NOTE—Take care to check for acetylene build-up in liquid oxygen storage, warns Mine Safety Appliance Co., Pittsburgh. An explosion can result if as little as 2 parts per million enter the oxygen plant system from the air. Mine Safety makes an infrared analyzer, the LIRA, which can detect minute quantities of acetylene in oxygen.

ROTATING SEALS—Horizons Inc., Cleveland, has a research contract to develop high temperature materials for rotating seals in jet engines. Wright Air Development Center, the sponsor, says parts like bearings and gears in engines and accessory components of Mach 2 and Mach 3 airplanes must be able to operate at temperatures up to 1000°F.

Metalworking Outlook—p. 51 *Market Outlook—p. 145*



This is an 18-in. main coolant valve for an atomic power plant. It's made of nickel-chromium stainless steel

Specs for Atomic Valves

Atomic power plants will use a lot of valves and pipe fittings. Tight requirements on quality dictate rigid inspection and precise manufacturing methods

RIGID quality requirements for valves and fittings going into nuclear power plants pose a serious challenge to the valve maker.

"But the industry feels quite able to meet all reasonable requirements—even hot loop tests for production verification of performance," says J. J. Kanter, directing engineer of Crane Co.'s research and development department.

He made the observation in a talk before the Second Nuclear Engineering & Science Conference in Philadelphia week before last. Scientists from all over the country were there to cover developments in the nuclear field and to look over products for atomic use which more than 100 companies exhibited at the International Atomic Exposition.

Pioneers — Crane, like many other companies on the product side of this infant industry, recognizes it has a responsibility to help make economic atomic power a reality. Its components must be of the quality needed for safe and dependable operation, and prices must be realistic.

Such goals are well worth the effort because atomic power will eventually represent a sizable chunk of new business. For example, valves and fittings for nuclear plants will be a $25 million business in 1960, a $90 million one by 1963, estimates a survey by the Atomic Industrial Forum.

Problems—Mr. Kanter discussed rigid inspection, corrosion resistance, sealing and specifications for forgings and castings which are involved in getting the quality needed for primary loop valves.

If valves control the flow of a primary fluid, special attention is given to all possibilities of failures or malfunctioning which might result in the spreading of a radioactive fluid or the loss of liquid cover of the fuel elements in case of shutdown.

The fluids handled depend upon the reactor system. They may be: Pressurized demineralized light or heavy water, wet saturated steam, liquid sodium or alloys of sodium-potassium, acid solutions of fission materials, liquid phenolics, molten bismuth or sodium containing fission products.

Tightness—The problem of sealing valve stems against leakage is an important one. Systems for safeguarding against leaks use special provisions beyond ordinary packing glands, such as bellows, canopies, labyrinths of sealing rings or even frozen seals of the fluid itself (sodium, for instance).

Primary loop piping of each type reactor presents a different corrosion problem. In the case of water cooled ones, radiation releases dissolved oxygen. It, along with decomposition products, is a factor in steel corrosion.

The corrosion resistance of piping and valves in the water cooled

reactor is receiving a great deal of attention since it is an important factor in the economics of reactor construction.

The austenitic nickel-chromium types 347, 304 and 316 are being used. In many cases, the choice is based on welding characteristics. Type 316, which is better stabilized than 304, and presents less difficulty in welding than 347, is generally described by reactor engineers as a "middle of the road" choice and is being favored in some installations.

Prototypes of reactors using carbon steel components in the primary loop system are under study. As applications grow, ferritic steel, ranging from plain carbon to the various chromium - molybdenum types, probably will be used.

The body, bonnet and disc components of primary loop valves must be of the highest quality. Any failure due to cracks or porosity would be serious.

To meet quality requirements, several manufacturing methods are being investigated, including casting, forging and welding. For large valves, steel castings are widely used and are an economical choice. Although forgings have been procured at higher cost for large valves in certain more critical and exacting installations, reactor designers have agreed that steel castings generally are satisfactory.

Fear of failure of steel valve components stems largely from concern over possible damaging effects of thermal cycling and thermal shock.

In this instance, stress raisers in a metal section may be suspected as a cause of eventual deterioration. Looked at with caution are: Forgings containing flakes, castings with hot tears, heat affected weld zones with microfissures, weldments with incomplete penetration and design with sharp changes in section.

The surface of valve parts is a special requirement. The rough forged or as-cast surface must be removed by machining, grinding, or filing both inside and out. A common spec is a 124 RMS finish.

The purpose of this requirement is twofold: 1. To reveal small defects which might otherwise be undisclosed by dye penetrant or other inspection methods. 2. To safeguard against surface irregularities which might accumulate contaminants.

This finish requirement is applied to stainless steel parts where machining costs are particularly high. Extensive use of rework and repairs of minor defects can be a sizable cost item.

Heat Treatment—The heat treatment of valve parts for primary loop applications requires special consideration, particularly with austenitic nickel-chromium steel castings.

Unlike ferritic carbon and low alloy steel castings, heat treatment does not give grain refinement. The columnar type crystals of the as-cast structure of massive sections remains. It can only be refined by forging or some other kind of permanent deformation treatment.

The kind of high temperature solution heat treatment (1950 to 2100°F followed by rapid cool) given these castings to place them in condition stable against intergranular corrosion — particularly important for type 304—serves to further soften the coarse grain structure.

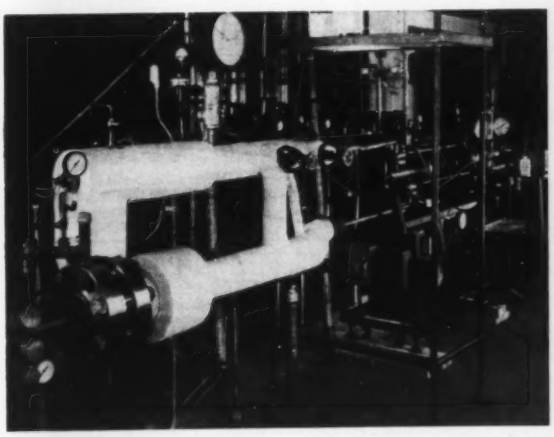
Caution—The result is that the valve alloy may have low yield strength. It may be difficult to get the strength presumed in design of the piping structures.

Major repair welds to castings shown to be needed by inspection should be done before machining. Any defect that shows up after finishing, requiring repairs of a major order, is costly.

This means that raw castings should be tested by methods capable of revealing all defects which might appear on the finished parts.

Methods—Crane Co. uses gamma radiography for testing most sections on valve parts. With both forged and cast ferritic steel parts, magnetic particle inspection is used to pick up linear discontinuities in or near the surface. Some use has been made of ultrasonic inspection. Dye penetrant checking after pickling may reveal defects that do show up on the freshly sandblasted surface.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, O.*

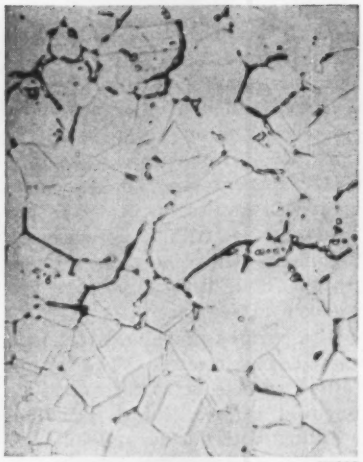


High pressure and temperature test loop at Crane Co. for performance studies on atomic valve components. The 2-in. system operates at 2500 psi and 600°F

Dye penetrant test is used on nonmagnetic stainless casting. Bleed out of dye from minute defects shows up through the white coating

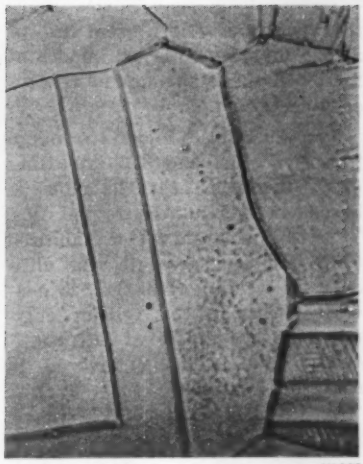
This superalloy can be produced in large quantities with uniform quality by standard melting practices. It has low strategic alloy content and is easy to fabricate

By MARTIN FLEISCHMANN
Metallurgical Engineer
Timken Roller Bearing Co.
Canton, O.



X1000

Fig. 1—Hot-rolled condition. Alloy is fully austenitic and nonmagnetic



X1000

Fig. 2—Quenched from 2100°F. Condition of maximum ductility

16-15-6 Alloy Fills a Need

FIRST of the superalloys produced in large quantities was 16-25-6 steel.

It was used in the turbine wheel of the General Electric turbosupercharger during World War II, later in the turbine wheels of jet engines and gas turbines.

During the last few years, new materials for gas turbine wheels have been developed. These compositions get their high temperature properties from precipitation hardening effects. Most frequently, titanium is the precipitation hardening agent.

Difficult — High-titanium steels of uniform quality are difficult to produce in large quantities using normal manufacturing procedures. Induction vacuum melting and

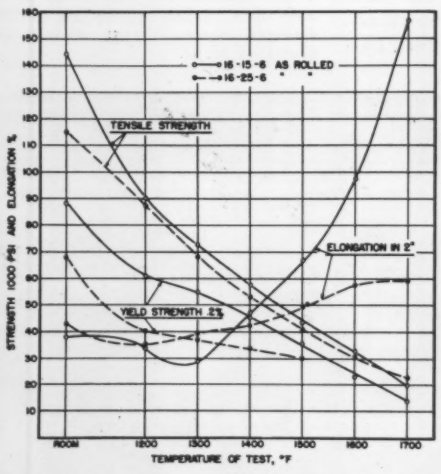


Fig. 6—Short time tensile properties of 16-15-6 and 16-25-6 alloys, 1-in. round, as-rolled

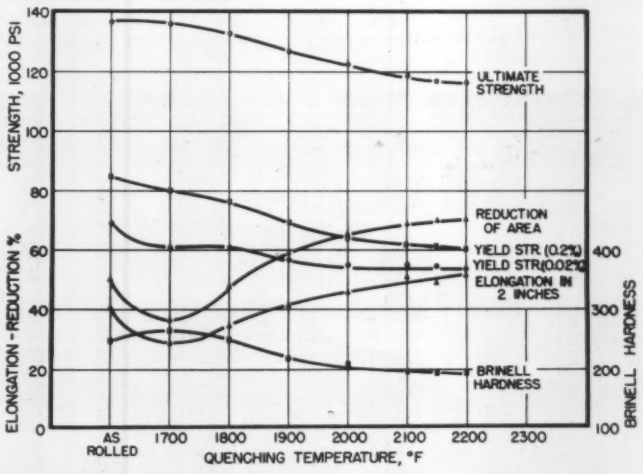
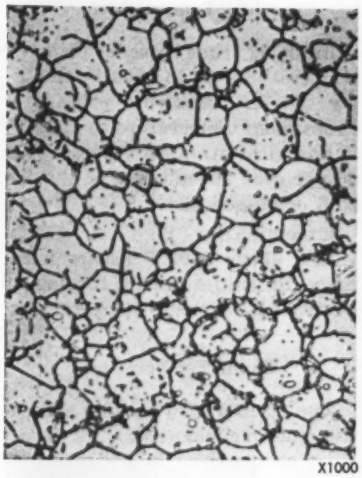
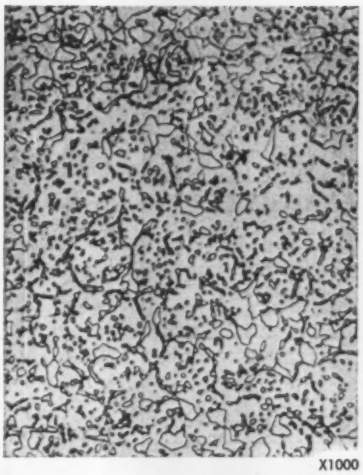


Fig. 7—Effect of quenching temperature on tensile properties of hot-rolled, 1-in. round



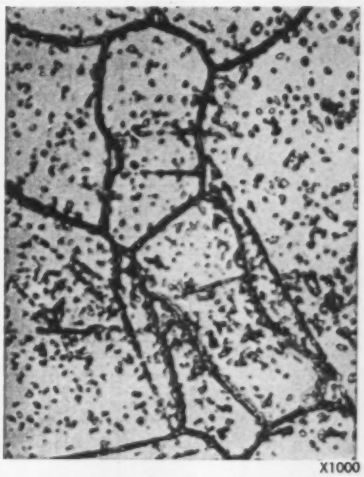
X1000

Fig. 3—In as-rolled condition and tempered 100 hours at 1200°F



X1000

Fig. 4—In as-rolled condition and tempered 100 hours at 1500°F



X1000

Fig. 5—2100°F solution quenched and tempered 100 hours at 1300°F

consumable electrode melting are used to produce these alloys at increased cost, but current capacity for melting by these special processes is small.

What is needed is a new material with a low strategic alloy content that is readily producible in large quantities and uniform quality with available equipment. The material should have high temperature properties at least equal to the 16-25-6 alloy without cold working or precipitation hardening.

New Alloy—The 16-15-6 alloy approaches these requirements. Its nominal composition, and that of the 16-25-6 alloy, are:

	16-15-6	16-25-6
Carbon	0.07 max	0.08 max
Manganese	7.50	1.35
Silicon	0.50	0.70
Chromium	16.00	16.00
Nickel	15.00	25.00
Molybdenum	6.00	6.00
Iron	55.00	50.00
Nitrogen	0.33	0.15

The new alloy contains 40 per cent less nickel than the standard 16-25-6 alloy. This is balanced by higher manganese which allows a substantial increase in the nitrogen content that can be retained in the metal during melting and solidification. The high nitrogen content assures a fully austenitic structure and adds to the high temperature properties of the alloy.

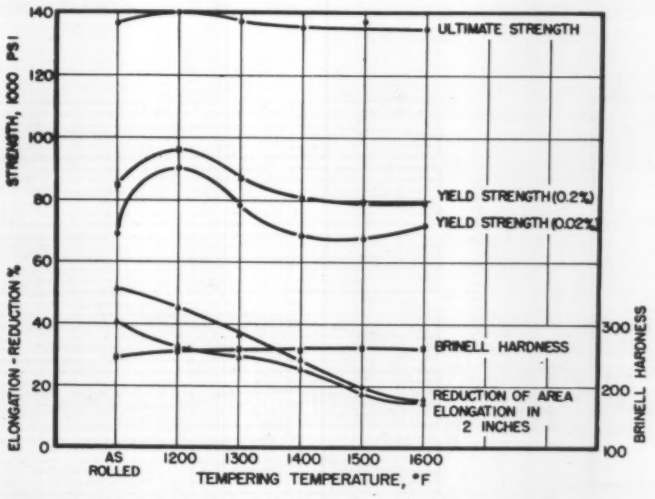


Fig. 8—Effect of 15 hours tempering on tensile properties of hot-rolled, 1-in. round

Applications

The outstanding advantage of the 16-15-6 alloy is its ease of fabrication. It forges well at temperatures up to 2100°F. By controlling the finishing temperature, yield strengths as high as 100,000 psi may be obtained.

Hot-rolled sheets 0.125 in. thick, tempered at 1200°F, pickled and roller leveled gave these properties:

Yield strength	
0.02 per cent	116,000 psi
0.20 per cent	129,000 psi
Ultimate strength	151,000 psi
Elongation in 2 in.	23.0 per cent

Contrary to most precipitation hardening materials, the 16-15-6 alloy has good welding characteristics.

Turbine Wheels — The present thinking on materials for turbine wheels of jet engines of the future calls for properties far above those obtainable with iron base alloys. These may be cobalt or nickel base alloys which will require special melting practices.

However, there should be many

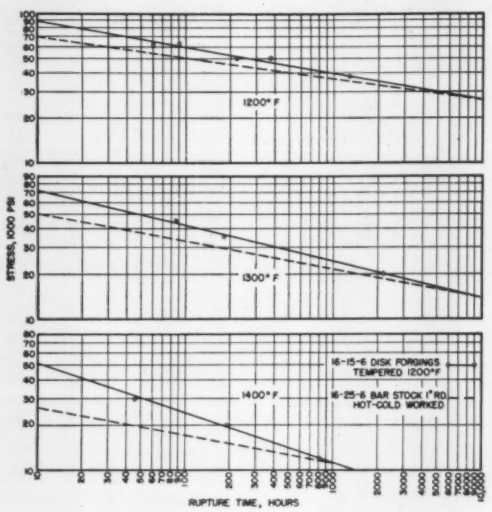


Fig. 9—Stress-rupture curves of 16-15-6 and 16-25-6 alloy at 1200, 1300 and 1400°F

parts of these engines where stresses and temperatures are ideal for use of the 16-15-6 alloys. One of these would be the later stages of the axial flow compressors where 1100 to 1300°F may be encountered.

Missiles—The guided missile for hypersonic speeds will require skin materials that perform for a relatively short time at heat produced by air friction. The 16-15-6 alloy may be the most economical choice because it can be rolled to exceptionally high strength values.

If these missiles are powered by liquid fuel rockets, a gas turbine normally is part of the equipment. Here again, the 16-15-6 alloy would be a good choice as the turbine wheel material.

The low strategic alloy content of the composition and its ease of fabrication should make it attractive for commercial uses. Large quantities with uniform quality can be produced with established melting facilities.

High Temperature

In short time tensile tests at temperatures up to 1700°F, the alloy shows excellent properties. From room temperature to 1500°F, it has yield strength values about 30 per cent above those of the 16-25-6 composition.

Exceptionally high elongation values above 1500°F assure minimum difficulties during forging at controlled finishing temperatures.

Room Temperature

The 16-15-6 alloy is fully austenitic and nonmagnetic. Its structure, as observed in hot-rolled, 1-in. round bars (Fig. 1), consists of austenite grains and another phase which has the appearance of carbides dispersed in banded form. Maximum ductility is obtained by heating to 2100°F or above and quenching (Fig. 2).

The microstructures of the hot-rolled alloy tempered for 100 hours at 1200 and 1500°F are revealed in Figs. 3 and 4. The precipitate coagulates gradually as temperature increases. The grain size is extremely fine, and there is no indication of recrystallization or grain growth.

Larger Grains—Contrast these photomicrographs with the structure of the alloy solution quenched from 2100°F and tempered for 100 hours at 1300°F as shown in Fig. 5. Here the grain size is much larger, and the precipitate, while

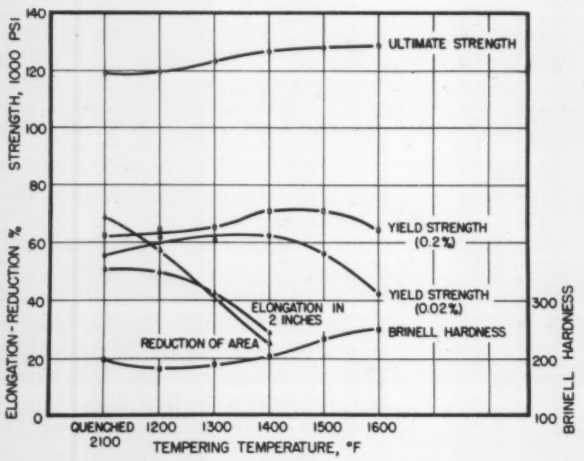


Fig. 10—Effect of 15 hours tempering on tensile properties of 2100°F solution quenched 1-in. round

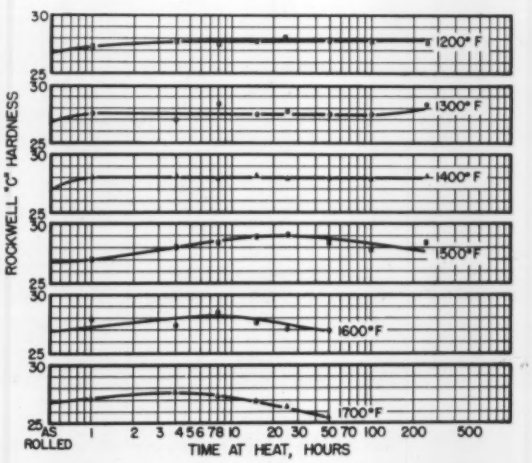


Fig. 11—Effect of tempering time and temperature on hardness of as-rolled, 1-in. round

distributed throughout the grains, also is quite noticeable in the grain boundaries.

The lowest heating temperature which would result in the solution of the precipitate was determined in a test series indicating the effect of increasing quenching temperatures (1700 to 2200°F) on the tensile properties of 1-in. round bars (Fig. 7).

Tempering—The effect of 15-hour tempering treatments on the tensile properties of hot-rolled and 2100°F solution quenched material is shown in Figs. 8 and 10. All tensile tests were made with standard 0.505-in. specimens. The best combination of properties is obtained on hot-rolled material tempered for 15 hours at 1200°F.

Fig. 11 illustrates the effect of tempering times (up to 250 hours at 1200 to 1700°F) on the hardness of hot-rolled, 1-in. round bars. Note that the hardness of the hot-rolled material increases or persists after 250 hours at 1500°F. It required more than 24 hours at 1700°F to noticeably reduce the original hardness of the hot-rolled alloy.

Age Hardening — The material may be age hardened after solution quenching from 2100°F (Fig. 12), but it would require more than 250 hours to reach Rockwell C 30 at 1200 to 1300°F. At 1700°F, Rockwell C 25 is reached after about 4 hours; at 1400°F, Rockwell C 27 may be obtained after 100 hours.

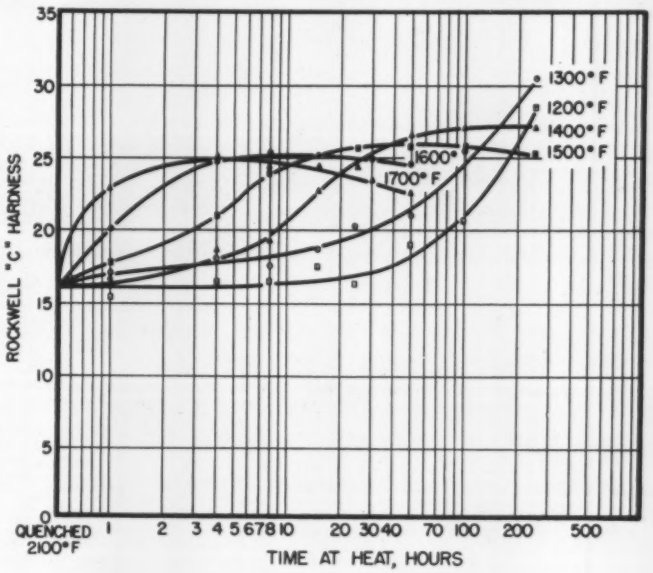


Fig. 12—Effect of tempering time and temperature on hardness of 2100°F solution quenched alloy

The effect of 100 and 250 hours of tempering at temperatures up to 1500°F is illustrated in Fig. 13. The material appears to retain ductility values above 20 per cent with no reduction in strength after long time heating at 1200°F.

At higher temperatures, yield strength and ductility values are materially affected. The same characteristics, but at a lower stress level, are shown for the solution quenched material up to 1300°F in Fig. 14.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, O.*

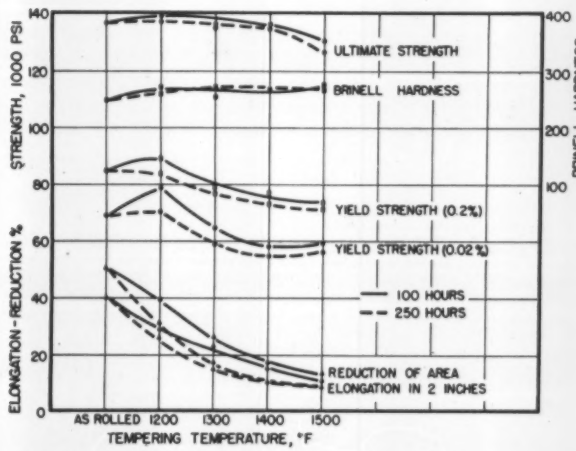


Fig. 13—Effect of 100 and 250 hours tempering on tensile properties of as-rolled, 1-in. round

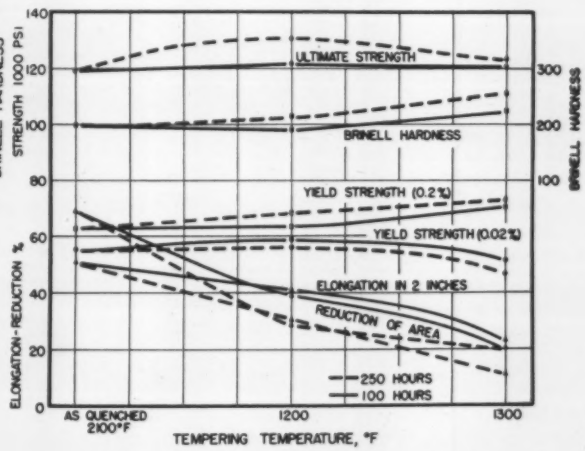
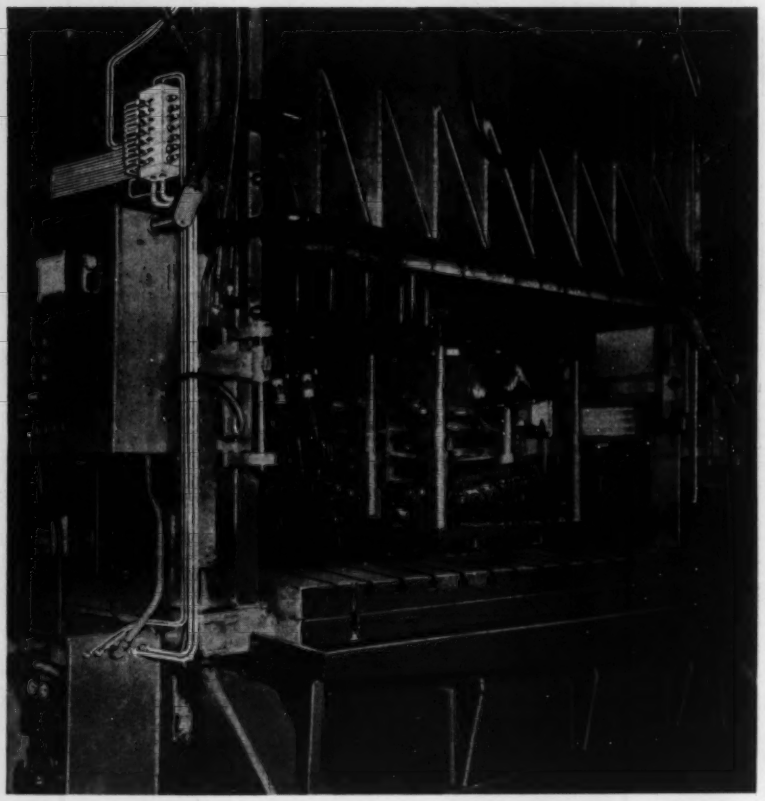
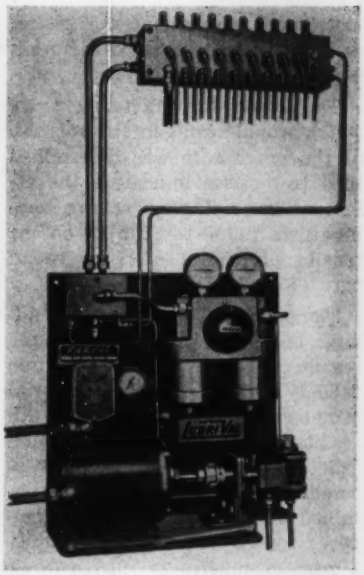


Fig. 14—Effect of 100 and 250 hours tempering on tensile properties of 2100°F solution quenched alloy



Installed on this press, a new system for circulating oil floods the bearings, then collects and re-uses the lubricant



On this system mock-up, the oil comes in from the reservoir through the lines at lower right. Pumped through the double-element filter, it goes into a reversing valve and on to the valve manifold. Each valve handles two bearings. Oil then is returned to the reservoir

Lube System Uses Circulating Oil

Designed for automatic and semiautomatic machinery, a new centralized system polices itself. In case of fault, it warns the operator—can be made to shut down machine

EASE and accuracy of maintenance are continuing problems to both builders and users of machinery. The accent on automation makes the problems more important than ever.

Centralized lubrication is an established part of this maintenance picture. To spread its base in centralized lubrication, Farval Corp., Cleveland, has added a circulating oil system to its repertoire.

Circuit — Called Lubrival, the new system pumps oil from a reservoir to a network of bearings, then returns it to the reservoir for re-use. It's designed particularly for use on presses and automatic and semiautomatic machine tools.

A pressure system monitors the system operation. If pressure drops (as in a line break), the system and machine shut down. The same thing happens if pressure builds up, as with a clogged line.

Variable—A control on the gear pump permits the operator to adjust the volume of oil sent into the system. Oil flows through high pressure filters into a reversing valve.

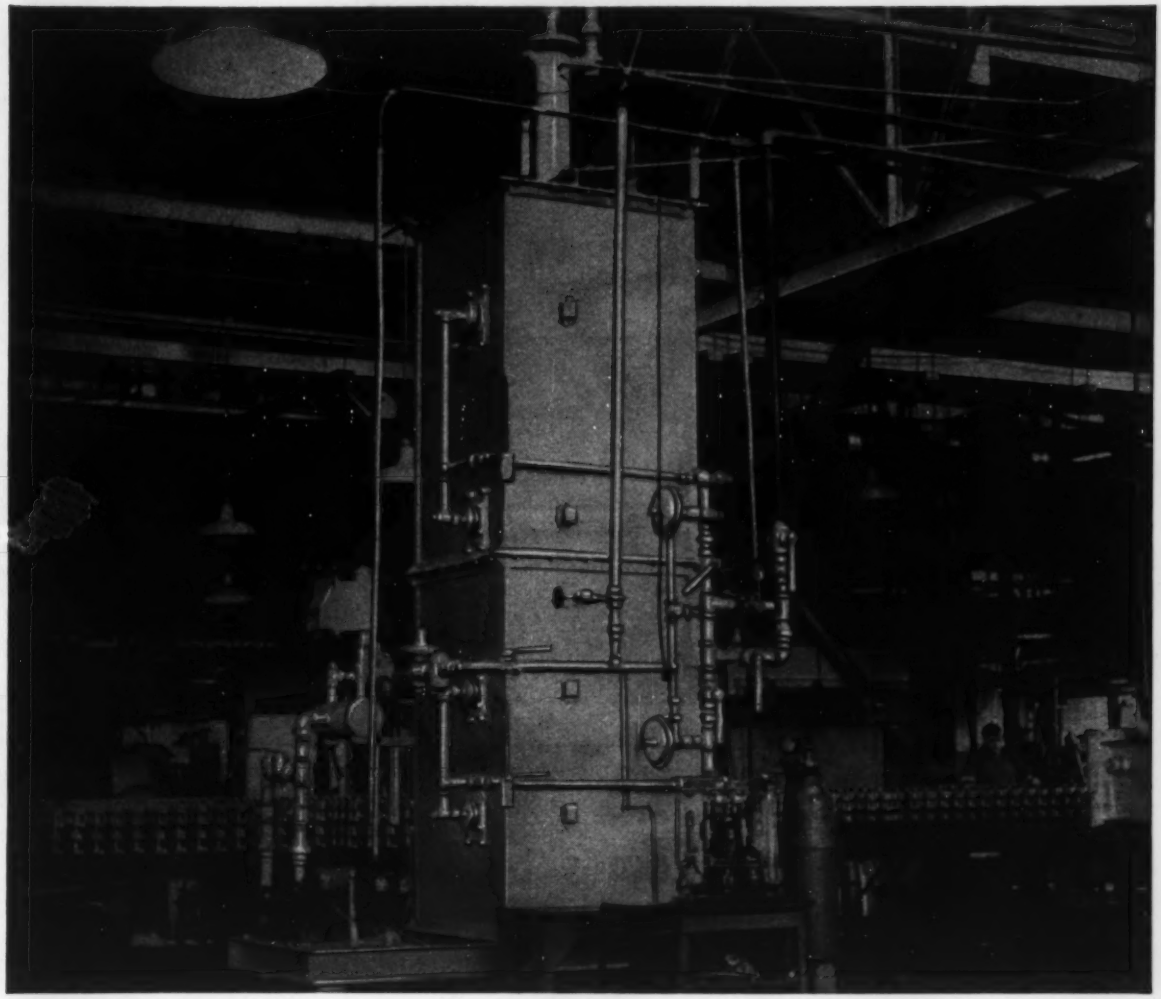
The reversing valve sends the lubricant through one line first, then through a second line on the second half of the cycle. Both lines feed Dualine measuring valves for delivery to the bearing points.

Sight Check — The measuring valves are linked together in manifolds. Each valve feeds two bearings, one during each of the cycle halves.

A rod on top of the valve piston sticks through into a plastic dome on top of the valve. Any failure of the valve shows up immediately in this dome. Since the valves are linked in series, the line stops when one valve fails or becomes clogged. This prevents continuing operation of the system after a fault occurs. With the visual check on top of each valve, the operator can locate trouble.

There is no theoretical limit to the number of valves that can be combined into a manifold. The practical limitation is on the length of the manifold and its tie-rod.

Since each valve is designed to serve two bearings, a simple, external crossporting accessory can be attached to merge the two discharge ports—giving a double shot of oil to a bearing.



1,500,000 cfh of atmosphere

That's the combined capacity of all the Surface RX® gas generators sold since this first one started operating April 4, 1941. This was the first practical catalytic gas generator for continuous bright gas carburizing . . . and it's still in use at Warner Gear Division, Borg-Warner Corp.

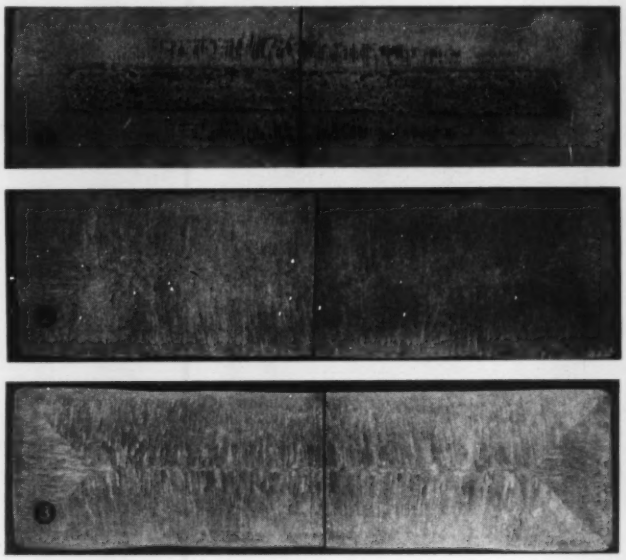
Such long-term reliability is only one of the reasons why so many plants standardize on Surface gas generators. Controllability, flexibility, turn-down operation, variety of gases and capacities are some of the other reasons. We'll be happy to tell you more about them.

SEND FOR BULLETIN SC-155 • SURFACE COMBUSTION CORPORATION • 2385 DORR ST., TOLEDO 1, OHIO

Surface® Heat Treat, Steel Mill, Glass Divisions • Kathabar® Air Conditioning Division • Janitrol® Aircraft-Automotive Division • Janitrol® Heating & Air Conditioning Division • Webster Engineering Company: Boiler Burner Division

Surface
HEAT TREATING EQUIPMENT

Three types of continuously cast low carbon steel:
1. Rimming. 2. Semikilled. 3. Killed



Evidence piles up that the process, still widely considered experimental, is ready to break into volume production. Ten machines are casting carbon steel

Continuous Casting Comes to Carbon Steel

IS CONTINUOUS casting ready for low carbon steel?

They think so in Europe. Plants are operating in England, Sweden, France and Western Germany.

They think so in Japan, and in Russia (where activity is especially brisk).

This year, some American plant should reach the same conclusion. In a sense, it has been reached already. The Williams machine at the Beaver Falls, Pa., plant of Babcock & Wilcox Co. has done some carbon steel casting. Inland Steel Co. ran 31 heats (about 900 tons) of rimmed, semikilled and killed carbon steel through the continuous strand at Atlas Steels Ltd. in Welland, Ont. Reports on Inland's results are just beginning to be released, and they do continuous casting no harm.

Optimism—Far from putting the kiss of death on the process (a popular opinion when Inland decided against it in favor of a new blooming mill), the Inland report reemphasizes the good features of continuous casting. But in its present state of development, it didn't fit the needs of Inland's high tonnage open hearth shop as well as conventional equipment.

Inland left the door open for the smaller shop, particularly one making steel in electrics or converters. The first commercial installation in the U.S. will probably come in such a plant—one with an ingot capacity of 400,000 tons or less.

Costs—Between 50,000 and 300,000 tons of capacity lies a gray area in which it becomes difficult to justify the cost of a modern blooming-slabbing mill. Complete with auxiliary equipment and modern electronic controls, such a mill could easily run over $10 million. A company with the right melting facilities and a building of adequate height might get into continuous casting for $2 million.

Says J. H. Girdler, vice president-operations of Atlantic Steel Co., Atlanta: "Capital investment for continuous casting in comparison with a blooming mill is so far in favor of continuous casting that you have to take a hard look before you make up your mind."

Typical—Atlantic Steel (its electric furnace capacity is 276,000 tons per year) is typical of American steel plants which have been pointed out as possibilities for continuous casting. Its electric furnaces are modern and efficient. Its blooming facilities are old and working at capacity. If Atlantic Steel should decide to replace its blooming mill, the decision to install a new bloomer or go to continuous casting would be heavily weighted by the difference in initial investment, but many other factors would also enter in. Here are some:

1. Continuous casting machines (like all new machines) have bugs.
2. Hot metal must be available in regular quantity on a close time schedule.
3. Multiple strands and/or sup-

THE NEW CASTLE *plant*

MESTA

DESIGNERS AND BUILDERS OF COMPLETE STEEL PLANTS

MESTA MACHINE COMPANY

PITTSBURGH, PENNSYLVANIA

PLANTS AT WEST HOMESTEAD AND NEW CASTLE, PA.

plementary blooming equipment would probably be necessary.

4. Range of product sizes and analyses ought to be strictly limited at first.

5. Know-how would have to be gained through trial and error.

Courage—As a representative of an interested company told STEEL: "We know carbon steel can be continuously cast. We know the product will be as good as we'd get from a blooming mill. But there are so many other unknowns. It takes real courage to choose continuous casting."

He might have added that carbon steel, with its big tonnages and tight profit margin, poses a tougher decision than alloy and stainless steels. At least part of the reason continuous casting got its start (in the ferrous field) with alloy steel producers is the high cost of alloy steel production by conventional methods.

Bugs—Some of the alloy steel experience will apply to carbon steel, but there will be plenty of differences, as Inland found out on the Atlas trials. There are many problems. For instance:

1. Pouring: Both bottom pouring and teapot ladles have been used. The first is conventional steel plant equipment; the second adds an insulated lid with the possibility for maintaining even metal temperature over a longer period. Each has its advantages. Should the metal be poured from a crane, or handled by a skip as on the machines at the Cail Works in Denain, France?

2. Tundish: What's the best shape? The tundish requires critical temperature control, but should it be by induction or direct flame? In some trials, the metal has been blanketed with an inert atmosphere to prevent oxidation, and this may be a partial answer to changes in analysis that sometimes occur between ladle and mold.

3. Deoxidation: Aluminum additions for deoxidation require more careful control than tossing a handful of shot into the ingot mold. Inland installed an automatic device that fed aluminum wire to the tundish stream as it entered the mold. The effect was to produce fully killed slabs. But ladle deoxidation caused freezeup in the tundish nozzle.

4. Mold: There's no agreement on what constitutes a good mold. The British are using welded molds with inner faces of approximately ¼-in. copper plates. The Atlas molds are heavy copper castings with several inches of metal between the inner face and the cooling water. Molds as short as 10 in. have been tried for bloom sections. The Russians are trying 60-in. molds with tapering inner faces to keep the mold in contact with the casting as it shrinks. Inland found a 20-in. mold satisfactory for 6½ x 24-in. slabs. The mold lubrication and oscillation questions are far from settled.

5. Cooling: At the AIME meeting in New Orleans, Michael Tenenbaum, superintendent of the Metallurgical Department at Inland Steel Co., showed a photograph of Niagara Falls with the comment: "We wished we had it." There's not only the problem of getting enough cooling water to the mold and the half-solid steel emerging from it; there's a considerable investment needed in cooling and recirculating equipment.

6. Control: There seems little doubt that continuous casting has to be fully automated to achieve consistent results. The process has a long way to go before the relationships between pouring temperature, pouring rate, mold size, withdrawal rate, cooling rate, metal analysis and other variables can be established, but a good start has been made.

But all these are "details," say men who have sweated over the process. The important point is that it works for carbon steel.

Capacity—On the basis of its experiments at Atlas, Inland calculated that a single strand plant, casting 6½ x 40-in. slabs of semi-killed steel, could cast about 70 tons per operating hour at an average speed of 35 ipm. Figuring 50 per cent utility for the strand, this works out to 840 tons of slabs daily, or 300,000 tons a year—if a heat of steel is always available when the casting plant is prepared to operate.

This indicated to Inland investigators that steelmaking units which tap around 70 tons (oxygen converter or bessemer) would be readily adaptable to the casting of slabs for a popular range of hot and cold-rolled sheet. Few electric furnaces tap heats too large to be handled by two-strand machines.

But the modern open hearth taps heats of a size considerably in excess of these values on a schedule averaging about 10 hours tap to tap. It would be necessary to have several furnaces operating on uniformly staggered tapping times (which seems most unlikely) and a large number of strands to handle the volume of metal. Or some type holding facilities would be needed—a costly expedient.

Strands—Multiple strands seem to be no great problem. The Cail Works operates a 4-strand machine from a common tundish which is casting over 3000 tons of slabs a month for seamless tubing, tin plate and electrical sheets. According to a representative of the company, it was "designed to make money." The Mannesmann machine at Huckingen, West Germany, is also 4-strand.

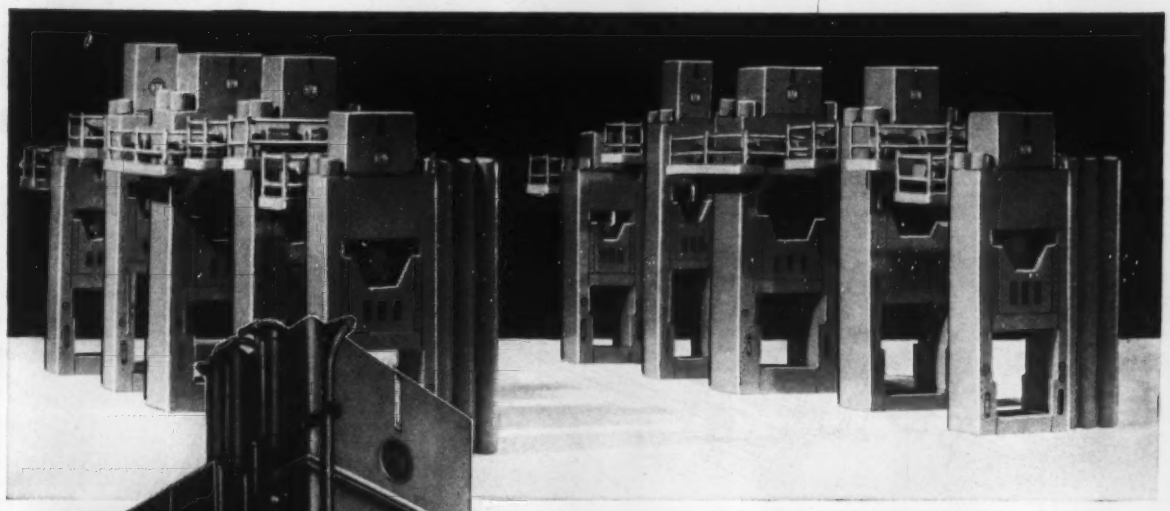
Considering initial cost and the need for continuous operation, it seems logical to assume that the first American high-production unit for carbon steel will be at least a 2-strand affair. It will probably get its hot metal from electric furnaces or oxygen converters, but don't rule out open hearths—the Russian machines at Krasnoe Sormovo and Sulina draw their metal from open hearths.

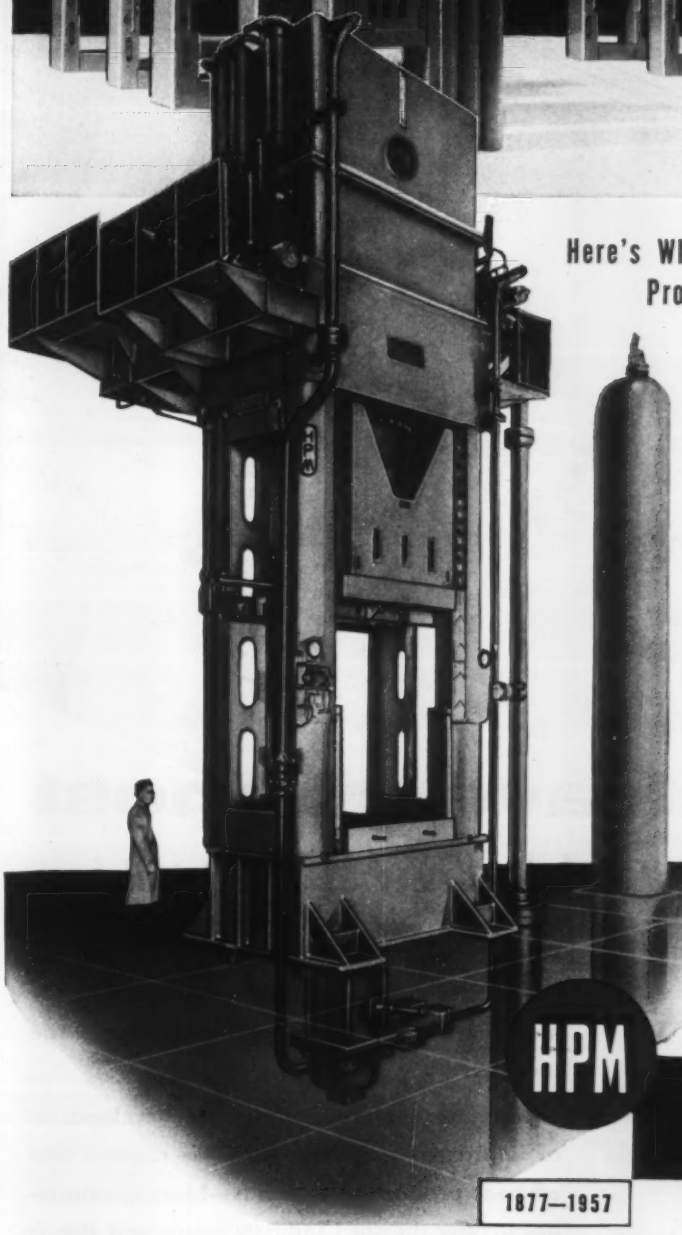
Casting rates of 35 ipm and 60 to 70 tons per hour (1¾-ton per inch of stand width) can be expected on the basis of present experience.

Savings—Until a background of experience has been built up and automatic controls have been proved, labor and maintenance costs will probably run high. But there will be immediate substantial reductions in handling and scrap costs.

The ratio of hot metal to semi-finished product will improve. French experience at Cail shows a 15 per cent improvement in yield for killed steel. Product quality will be indistinguishable from material made from rolled ingots. Improvements in automatic control and in handling the hot slab can be expected.

IT'S A MATTER OF EXPERIENCE . . .





Here's Why More H-P-Ms are Chosen for Shell Production than any other make of Press

H-P-M high explosive shell production know-how has been invaluable through three major emergencies and our preparedness program. Here's the proof ...the above photo shows models of H-P-M presses for two shell lines which will produce 8 inch high explosive shells at a large midwestern plant. And a line of five similar presses has been installed at another plant for the same job. These are the only two major facility contracts placed for shells in the past two years. The presses, tooling and engineering planning are H-P-M standards—standards that the Ordnance Industry team accepts with complete confidence assured through hundreds of successful installations.

Shell manufacture is only one of the important jobs for which H-P-M presses are so widely accepted throughout the metalworking industry. If you have a problem concerned with the forming of metal, complete H-P-M engineering service is available for planning and follow through. For complete information, write or call us today.

The H-P-M 1000-ton press used in hot piercing high explosive 8 inch shells, the first operation in the hot forging, cold extrusion process used in shell manufacture.

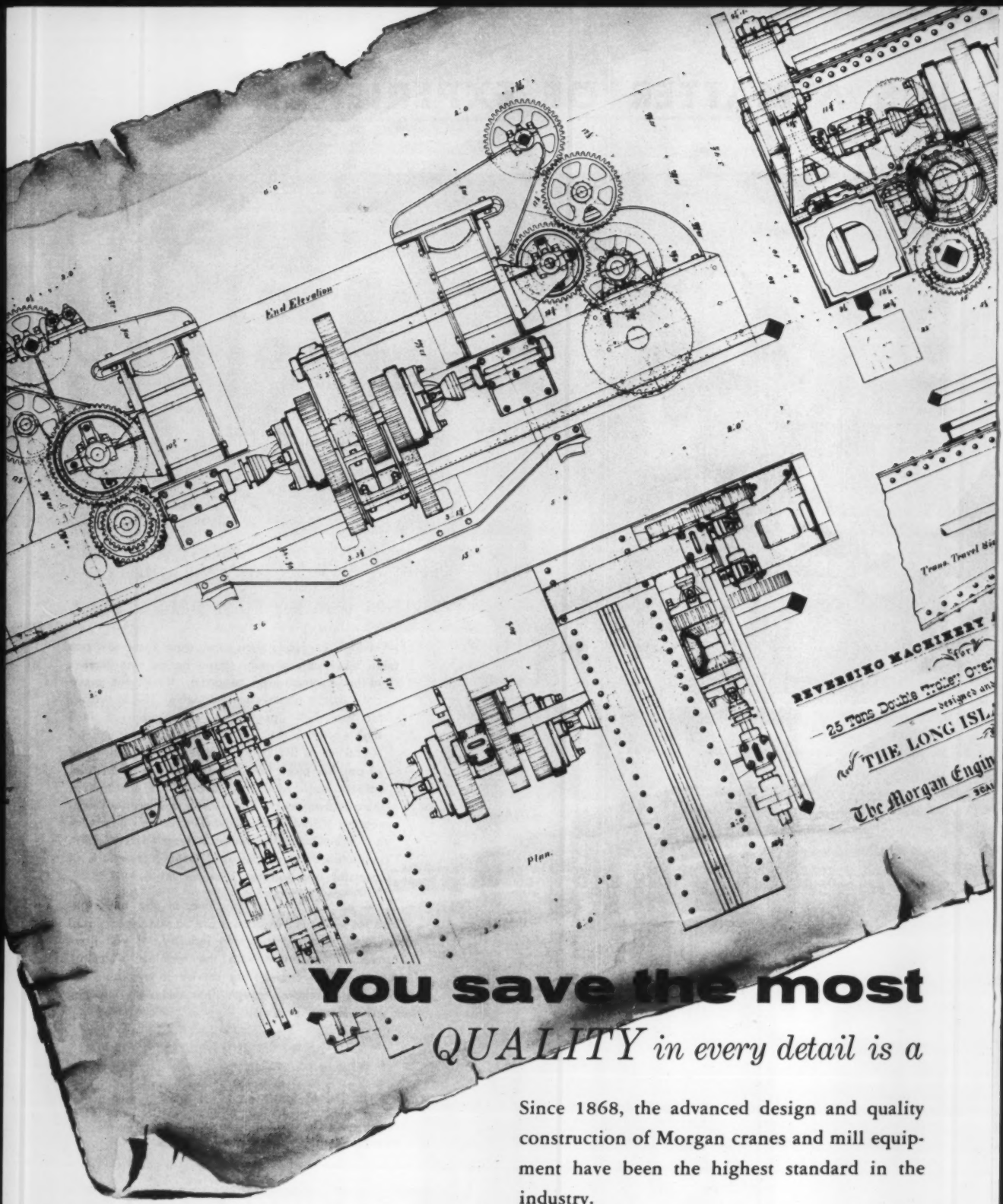
HPM

THE HYDRAULIC PRESS MFG. CO.

Mount Gilead, Ohio, U.S.A.

A DIVISION OF KOEHRING COMPANY

1877—1957

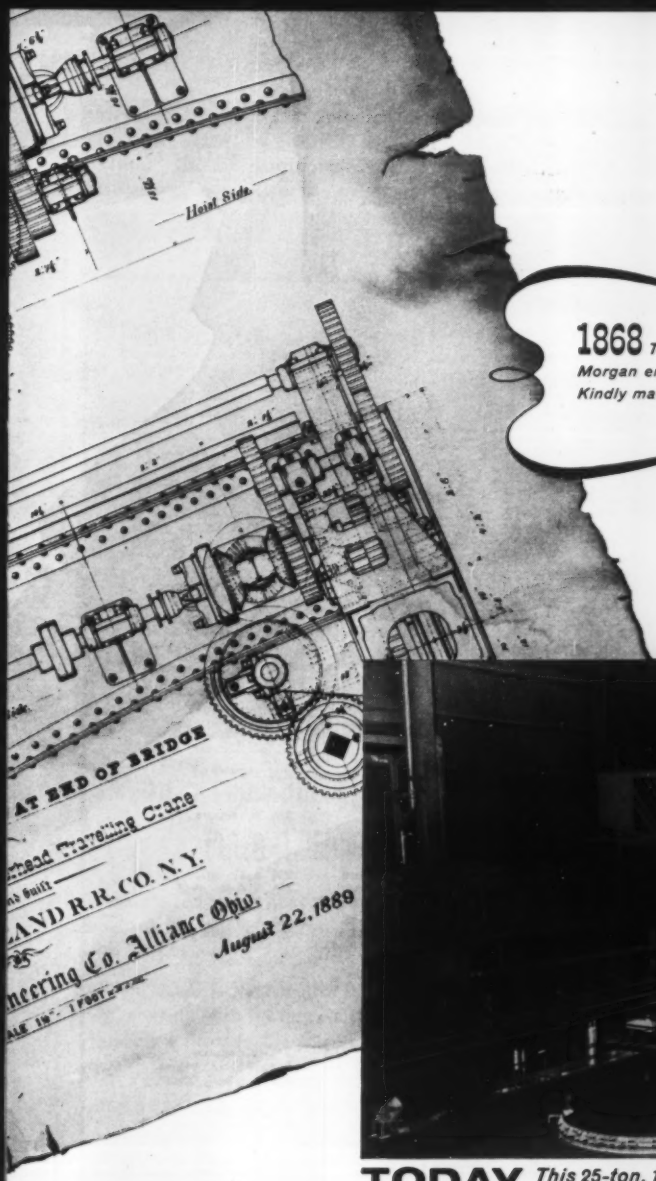


You save the most

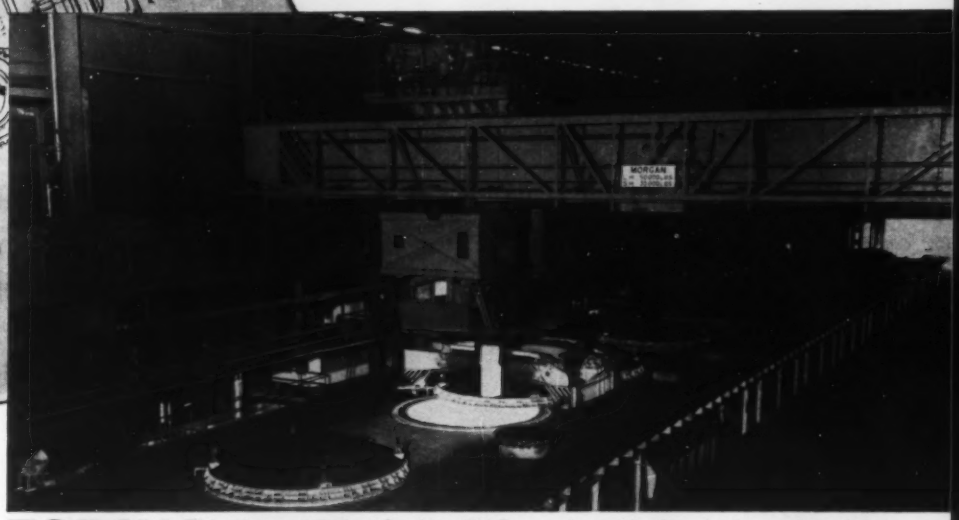
QUALITY in every detail is a

Since 1868, the advanced design and quality construction of Morgan cranes and mill equipment have been the highest standard in the industry.

Today, through research and the development of improved equipment features—modern and efficient production methods—Morgan continues to offer the steel industry equipment that is



1868 *This 14" x 20" reproduction of an early-century Morgan engineering drawing is available for framing. Kindly mail your request on your Company letterhead.*



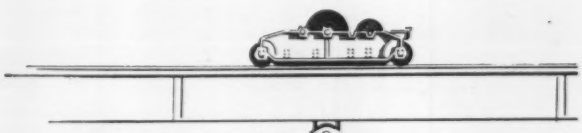
TODAY *This 25-ton, 107-foot Soaking Pit Crane shows the fine design and workmanship, the attention to details which has always typified Morgan Cranes.*

by buying the best...

tradition with Morgan cranes and mill equipment

less costly to operate and maintain. Let our representative show *you* how to save the most by buying the best . . . MORGAN!

Overhead electric traveling cranes, gantry cranes, open hearth special cranes, plate mills, blooming mills, structural mills, shears, saws and auxiliary equipment.



THE

MORGAN

ENGINEERING CO. *Alliance, Ohio*

PROGRESS . . .

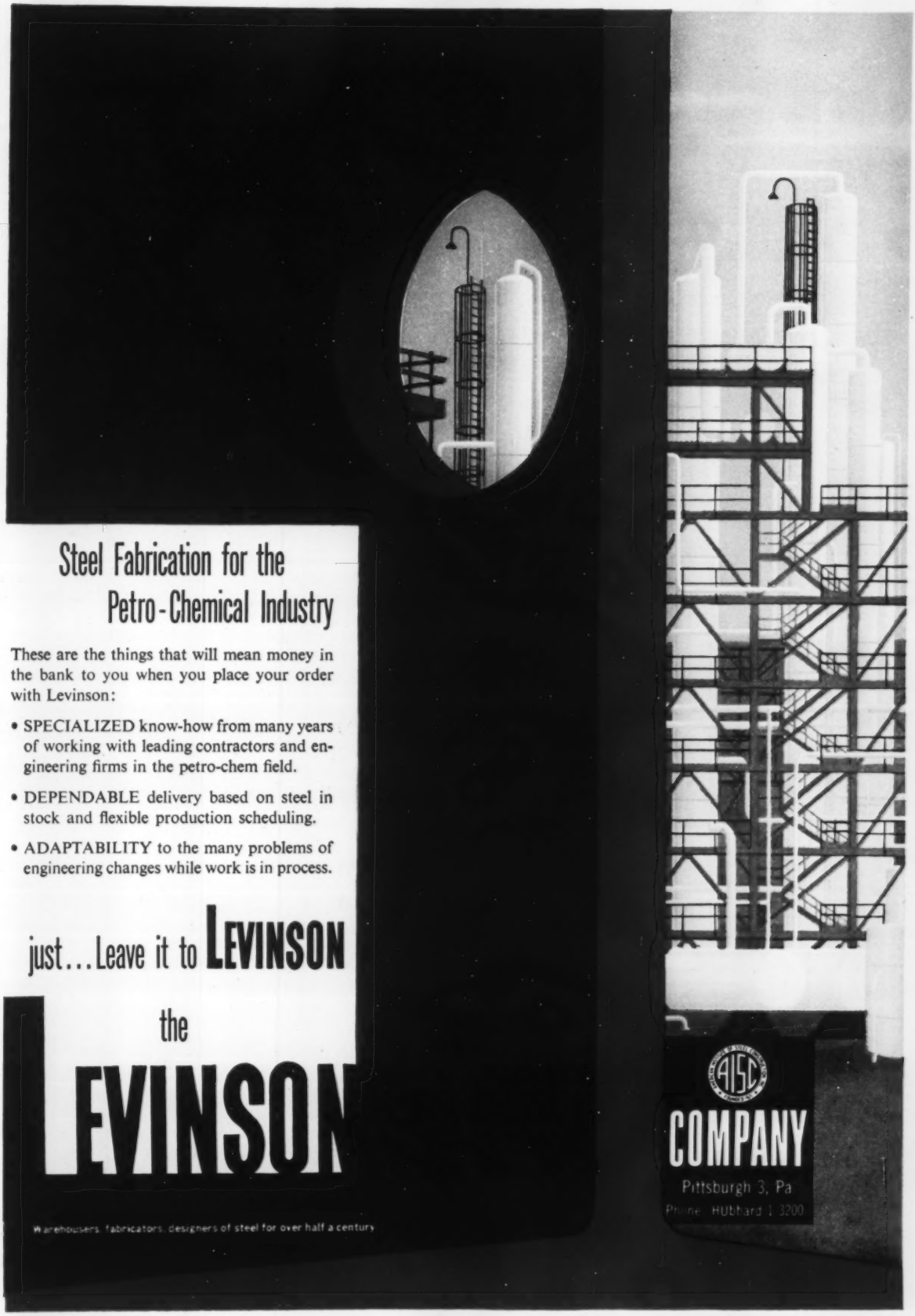
A universal mold which has movable walls (as compared with solid molds) is not out of the picture.

Neither is mold oscillation achieved by springs (a British development). But the steelmaking furnace feeding directly into the casting machines (along nonferrous lines) it still a long way off.

Continuous Casting Machines for Steel

Company	Date Started	Basis	Type	Strands	Casting Speed ipm	Casting Speed tons/hr	Types of Steel	Sizes Cast
AUSTRIA								
Gebr. Boehler & Co. Kapfenberg	1952		Boehler	2(4?)	80	..	Stainless, alloy steels	4, 6-in. square and round, 18-in. slabs
CANADA								
Atlas Steels Ltd. Welland, Ont.	1954	Commercial	Rossi-Junghans (Koppers)	1	100	50	Stainless, alloy steels	2½ x 17 in. to 6½ x 24-in. slabs, 4¼-in. square to 8 x 11-in.
ENGLAND								
United Steels Ltd. Barrow in Furness	1952	Commercial	Rossi-Junghans	1	100-240	8-11½	Carbon, stainless, spring steels	2 to 3⅝-in. square
United Steels Ltd. Barrow in Furness	1956	Experimental	Horizontal Rossi-Tessman	1	170	5½	Carbon steel	2-in. square
BISRA* Sheffield	1955	Experimental	BISRA*	1	...	30	Low alloy	4-in. round, 4-in. square, 1¾ x 9-in. slab
Wm. Jessop & Sons Ltd., Sheffield	1954	Experimental	BISRA*	2	30	8	Tool, stainless, special steels	4-in. square
FRANCE								
Ste. des Hauts-Fourneaux et Forges d'Allevard Allevard	1956	Commercial	Rossi-Junghans	1	145	11	Spring steel	3-in. square
Ste. Francaise de Constructions Mecaniques, Anciens Ets. Cail, Denain	1955	Commercial		4	22	60	Carbon steel	9½-in. square
Cie. des Ateliers et Forges de la Loire, Unieux	1955	Commercial	Vergniaud	2	35	4	Special and alloy steels	2½ x 3½-in., 3½ x 4-in. oval
ITALY								
S. p. A. Ferriere Acciaierie de Udine (SAFAU)	Under construction	Commercial	Rossi-Junghans	1	...	..	Carbon Steel	5, 7-in. square
JAPAN								
Sumitomo Metal Industries Ltd. Osaka	1955	Commercial	Rossi-Junghans (Koppers)	1	40-160	9-11½	Carbon, alloy steels	3 to 5¼-in. square
SWEDEN								
Nyby Bruks A.B. Nyby Bruk	1954	Commercial	Rossi-Junghans	1	40-130	11-16	Carbon, stainless, tool	3½-in. square, 6 to 7¼-in. round, 2¼ x 13-in. slab
SWITZERLAND								
A. G. der Von Moos' schen Eisenwerke Lucerne	Under construction	Commercial	Rossi-Junghans (Koppers)	1	...	..	.....	4-in. square, 7 x 19½-in. slab
U.S.A.								
Allegheny-Ludlum Steel Corp. Watervliet, N. Y.	1949	Idle	Rossi-Junghans	1	30-50	5-11	Stainless, alloy steels	3½-in. square, 5½-in. round, 3 x 15-in. slab
Babcock & Wilcox Co. Beaver Falls, Pa.	1948	Commercial	Williams	1	96	23	Carbon, stainless, low alloys	4¼ x 9-in. oval, 6, 7-in. square, 3 to 5 x 15-in. slab
Braeburn Alloy Steel Corp. Braeburn, Pa.	1947	Experimental	Tocco-Goss	1	100	10	Alloy, tool steels	4-in. square
U.S.S.R.								
Ministry of Red Fleet	1952	Pilot Plant	3-stage oscillation	1	13	1 1/3	Gray iron	4-in. round
Novo-Tula	1953	Commercial	Junghans type oscillation	1	20-32	32	Carbon, alloy steels	6 x 20 in., 8 x 24-in. slab
Krasnoe Sormovo	1955	Commercial	TsNIIChM†	2	36	60	Carbon	7 x 16½-in. slab
Sulina	....		TsNIIChM horizontal	2	100-360	70	.....	4 to 5½-in. square
WEST GERMANY								
Deutsche Edelstahl Werke A. G. Krefeld	Under construction	Experimental	Horizontal Rossi-Tessman (Koppers)	1	10-100	3-30	Alloy steels	4-in. square, 3 x 12-in. slab
Mannesmann-Huttenwerke, A. G., Huckingen	1952	Commercial	Junghans	4	20-50	94	Low alloy electric	5¼-in. round, 6¼-in. polygon, 3 x 12 in., 8 x 9½-in. slab, 12-in. square
Klockner-werke Hagen-Haspe	1953	Experimental	Junghans	1	23-47	3 1/3-8 1/5	Rimmed steel	3, 4¼, 7-in. square
Rhein Roehrenwerke A. G. Mulheim	1952		Junghans	2	...	12	Low alloy electric	4¼-in. square, 5, 6¼-in. round

*British Iron & Steel Research Association.
†Soviet Central Research & Development Institute for Ferrous Metallurgy.
Source: Koppers Co., Pittsburgh, and STEEL.



Steel Fabrication for the Petro-Chemical Industry

These are the things that will mean money in the bank to you when you place your order with Levinson:

- SPECIALIZED know-how from many years of working with leading contractors and engineering firms in the petro-chem field.
- DEPENDABLE delivery based on steel in stock and flexible production scheduling.
- ADAPTABILITY to the many problems of engineering changes while work is in process.

just... Leave it to LEVINSON

the

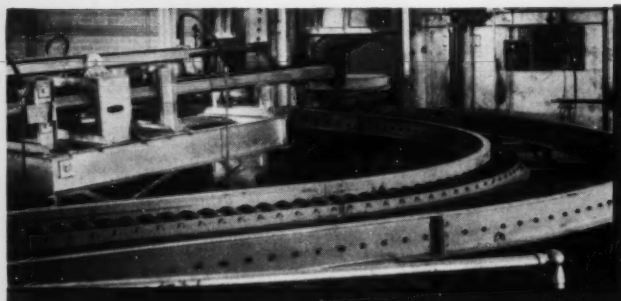
LEVINSON

COMPANY

Pittsburgh 3, Pa

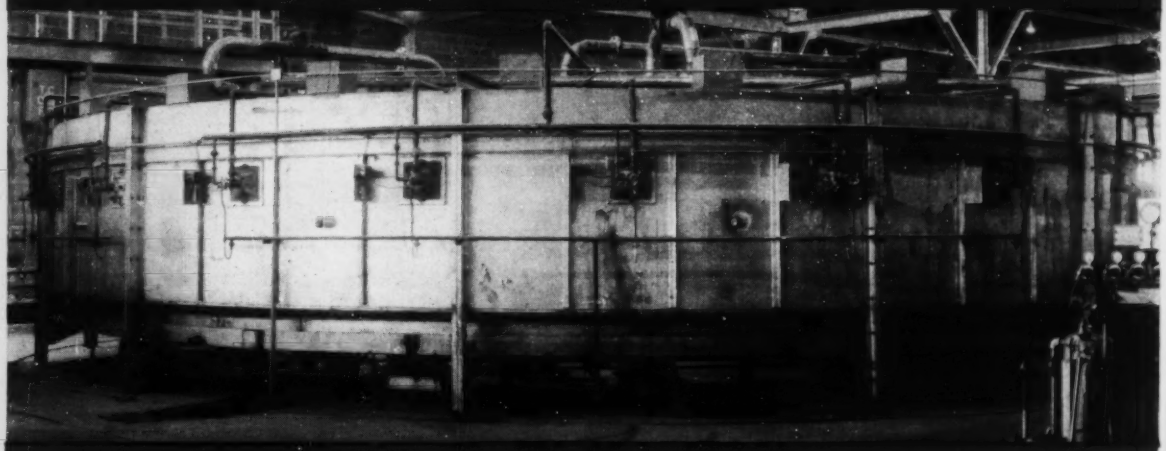
Phone HUbbard 1 3200

Warehousers, fabricators, designers of steel for over half a century



This furnace is set up for automatic loading in regular plant production line.

This field-erected Lindberg rotary hearth furnace is one of several completed, under construction and on order, for plants in U. S. and Canada.



Every so often we want to remind you . . .

LINDBERG Builds Big Ones!

Yes, Lindberg does build big ones! The rotary hearth furnace shown here was field-erected by Lindberg Industrial. It is used for heat treating car wheels and is set up for automatic loading. It's outside diameter is 44 feet and capacity is over 13,000 lbs. per hour.

This is just one of many types of industrial heating equipment, heat treating furnaces, melting furnaces, enameling furnaces, ceramic kilns, that Lindberg is prepared to design, construct and install in your own plant.

Lindberg's years of experience in the broad field of industrial heating equipment, its staff of expert laboratory technicians and seasoned application engineers assure your getting the best suited installation for your process and production requirements.

Whatever your needs, if it has anything to do with the application of heat to industry, better talk it over with Lindberg. Just get in touch with your nearest Lindberg Field Office (see your classified telephone directory) or write us direct.

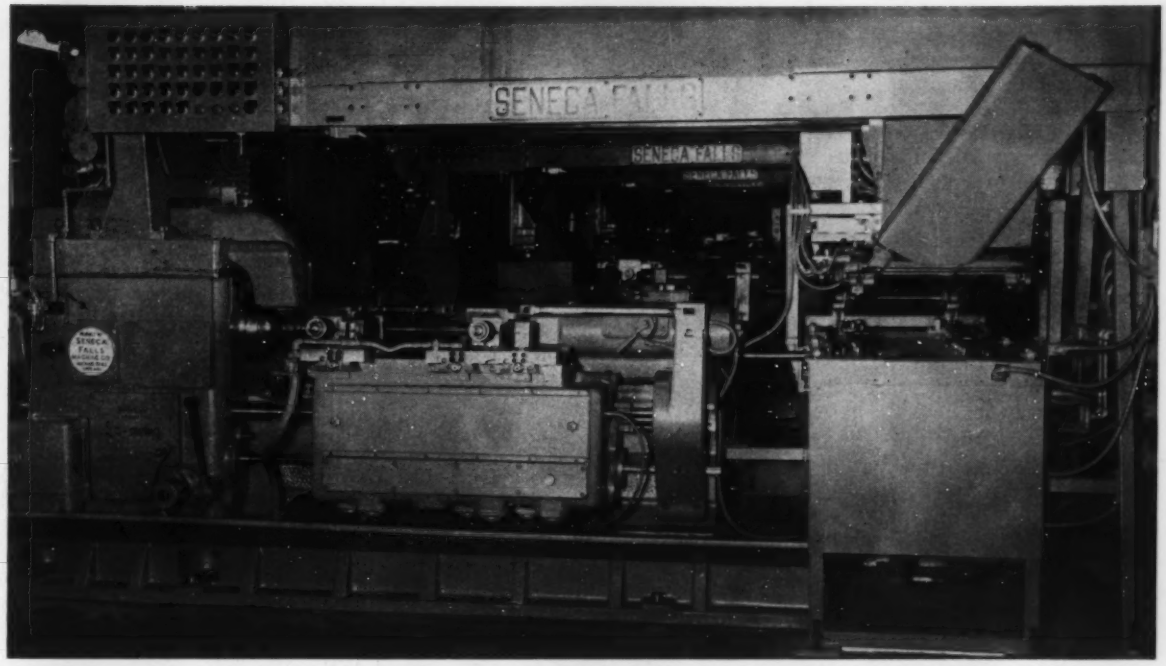
LINDBERG INDUSTRIAL

LINDBERG INDUSTRIAL CORPORATION

2321 West Hubbard Street, Chicago, Illinois

Los Angeles Plant: 11937 S. Regentview Avenue, at Downey, California

Associate Companies: Lindberg Engineering Company, Chicago • EFCO-Lindberg, Ltd., Toronto, Canada • Lindberg Italiana, Milan, Italy • The Electric Furnace Company, Ltd., Weybridge, Surrey, England • Establissements Jean Aube, Paris, France • Lindberg Industrie, Ofenbau, Gross Auheim, Germany • Toyo Menka, Tokyo • Lindberg Engineering Company (Australia) Pty. Ltd., Melbourne



Rough forgings come in on the table at right. A carrier picks them up, moves them to the left into loading position. The whole cycle is automatic

Lathes Are Automated for Axle Shafts

Automatic gaging stations between each machine check parts for tolerance—stop the cycle if a dimension is offsize. Machine spacing provides for part bank between units

AUTOMOTIVE axle shafts come off this line of four machines at the rate of 180 an hour. They completely machine the flange and five diameters and perform several complete chamfering and squaring operations.

Designed and built at Seneca Falls Machine Co., Seneca Falls, N. Y., the line consists of Lo-Swing lathes tied together with automatic handling and gaging stations.

Sequence — Rough forgings arrive by chain conveyor at the pickup and gaging table near the first machine. One table is attached at the tailstock end of each lathe. Rough parts drop automatically into shuttle cradles that are mounted on endless chains. The cradles move forward, carrying the forging to a position in line with an elevator.

Resting in the elevator cradles, the rough part moves up into loader arm fingers. Both load and unload arms are carried on a transfer carrier that moves back and forth above the machine center line. It travels on overhead rails.

As the transfer carrier moves into position over the machine, unload arms drop down and grip the finished part. The tailstock center retracts, and the shaft is lifted up and out of the work area. Then the loader arms lower the rough shaft between the centers. The tailstock center advances to support the shaft and a finger latch is tripped by the tailstock quill to release the shaft.

The shafts are driven from a clover-leaf recess forged into the outside flange. Headstock spindle positioning is automatic, so the work driver is in position to enter the recess before the spindle clutch is engaged.

Move to Gage — As machining begins, the transfer carrier moves back down to the pickup station. As another rough forging is being

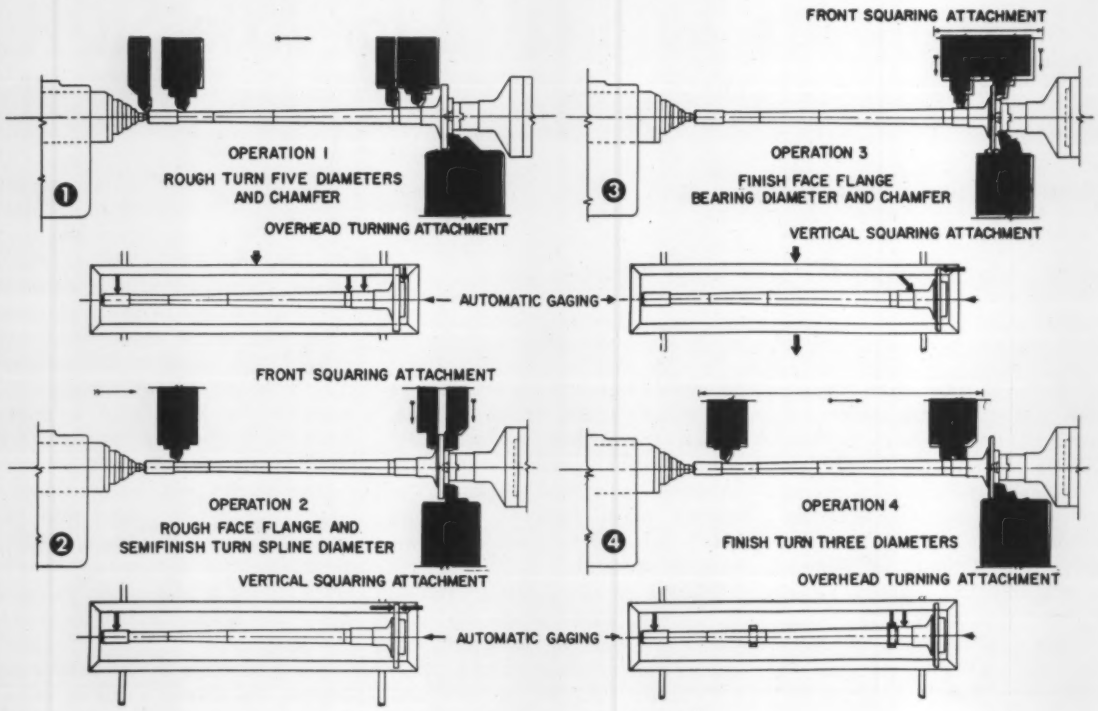
loaded, the finished part is dropped in raised elevator cradles that lower the shaft into shuttle cradles on the table. The shaft then moves into a gaging station. If all dimensions gage to required tolerances, the part is released to a chain conveyor that takes it to the next machine.

If the finished part is off tolerance, it stays locked in the gaging station, and the machine automatically stops at the end of the next machine cycle. A signal light shows the operator which dimension is offsize and tells him whether the dimension is oversize or undersize.

Machines are spaced far enough apart to permit easy access for tool changing. Spacing also provides room for a bank of parts to accumulate on the conveyors between machines. Only one machine needs to be shut down for tool change. The others continue to produce—drawing parts from the bank.

View from the rear of the machine shows the loading, transfer and gaging stations. Conveyor at lower left is for chips

Flow chart shows sequence of operations (top to bottom). Between each lathe, a gaging station automatically checks dimensions just machined



"Bill, why are you so sure Dow perchloroethylene will do a better job in my degreaser?"

"One big reason, Jess. Dow Perchloroethylene Industrial is tops in *stability*. Its resistance to breakdown and deterioration is as good as you can get."

"So what does it do for me?"

"Plenty. Cleans parts thoroughly the first time through. Eliminates rejects and reruns. Prevents damage to your degreaser and the parts—especially white metal parts."

"Think it'll remove that wax?"

"Sure will. Its higher boiling point gives parts a longer, more thorough cleaning before reaching the vapor temperature. It's real tough on those higher melting waxes."

"O.K., Bill, so it'll really clean. But is it safe?"

"You bet! No flash point and no fire point."

"All right. I'm convinced it's the best solvent for the job. Say, you sure know a lot about it."

"Not really. Dow people know more."

"Who?"

"Dow. The Dow Chemical Company, Midland, Michigan. The company that also makes Dow Trichloroethylene for vapor degreasing, Chlorothene® for cold cleaning, and Dow Methylene Chloride for stripping. Why don't you drop them a line?"

YOU CAN DEPEND ON DOW

Something new... made better by aluminum

Aluminum "sail" of atomic sub breaks water as ship surfaces. "Sail" is the protective sheathing around superstructure and controls.

New alloys make aluminum a seagoing metal

The new atom-powered submarines "Nautilus" and "Seawolf" offer dramatic proof that aluminum can be just as much at home in salt water as on dry land. Both of these modern vessels are equipped with streamlined aluminum sheathing above decks to reduce topside weight. Other interesting marine uses of aluminum include a speedy new Canadian subchaser, the superstructure of passenger ships like the new Norwegian liner *Bergensfjord* and the S. S. United States and hundreds of different types of pleasure craft.

Key to the use of aluminum in many of these marine applications is the development of special alloys and welding techniques by Aluminium Limited research. With these problems solved, aluminum fabricators are sure to find larger markets in the shipbuilding field.

Through research, new and different uses for aluminum are broadening fabricators' markets everywhere. To help assure a dependable supply of primary metal for independent fabricators, Aluminium Limited is investing $3,000,000 a week in additional production facilities.

Supplying U. S. Industries with primary aluminum from Canada

Aluminium Limited Sales, Inc.

630 FIFTH AVENUE • NEW YORK 20, N. Y.

CLEVELAND • CHICAGO • DETROIT • LOS ANGELES • BUENOS AIRES • SÃO PAULO

Sales Off to a Good Start

Machine tool distributors say there'll be no dip in orders this year. A spot survey shows some areas will come out better than they did last year

IN RECENT weeks, business observers have been claiming that they see suggestions of a slump in the machine tool industry.

Their vision is questioned by a majority of machine tool builders. (See STEEL, Feb. 4, p. 59.)

Machine tool distributors are voicing their dissent now. At a meeting of the American Machine Tool Distributors' Association, Joseph F. Owens Jr., association president, cited the pessimistic undercurrents and declared: "Despite tight money and scattered talk of letdowns in some industries, the fact remains that overall distributor machine tool volume thus far in 1957 is good."

Spot Check—Mr. Owens' conclusions were based on more than personal experience and scuttlebutt. Just before the meeting, the association ran a spot check on a cross section of the membership.

Result: "Thus far this year, new orders for machine tools sold through distributors are generally equal to or ahead of those in January and February, 1956."

In some areas, the study was particularly revealing. Metropolitan New York, the South, most of the Midwest, Southwest and Pacific Northwest showed 10 to 50 per cent gains over the same period last year.

Warning that the small sample can't be projected to an industry (or even an area) figure, Mr. Owens added that the information is sufficient to identify the trend as a rising one. The results, he feels, bear out the association's year-end statement that shipments of distributor-sold machines will "at least maintain 1956 levels and will increase from 5 to 15 per cent in those areas where continued expansion is going to call for newer, more efficient and more productive machine tools."

Swish

No one knows how fast you can cut a piece of metal. But a recent experiment at Warner & Swasey Co., Cleveland, proves that the newly developed ceramic cutting tools have upped speed limits considerably.

Using a special turret lathe, researchers pushed it to 16,454 sfpm. It was part of a W&S sponsored project conducted by the industrial engineering research laboratory at Ohio State University.

They used a 13-in. blank of 1040 steel which was about 3½-in. long. Depth of cut was 0.040 in.; feed was 0.011 in. per revolution. The workpiece was bolted to the machine spindle and was given extra support by a center mounted in the machine's hexagon turret. Power was supplied by a heavy duty motor (40 hp, direct current) directly to the spindle through step-up gearing. The motor has delivered over 100 hp under extreme loads for short periods.

Tool life was one cut per tool edge.

Washington Quandary

A recent Defense department directive on mobilization plans may affect the trigger tool program. No one is sure, but the directive seems to call for stand-by facilities, and implies that there will be no build-up time in case of attack. Machine tool builders who have pool orders may have to throw them out. Prediction: No great builder regret.

- moves *Inland Steel Products* into special production 4-times faster
- helps cut direct-labor costs 20% for *The Colorado Fuel & Iron Corp.*
- no lost production time in moving *Wyman-Gordon* machine shop
- cuts machine installation cost 90% for *American Type Founders*

Barry Leveling Machinery Mounts let you move machines wherever they are needed, and have them delivering full output *in minutes*—with no delays for drilling, lagging, or shimming.

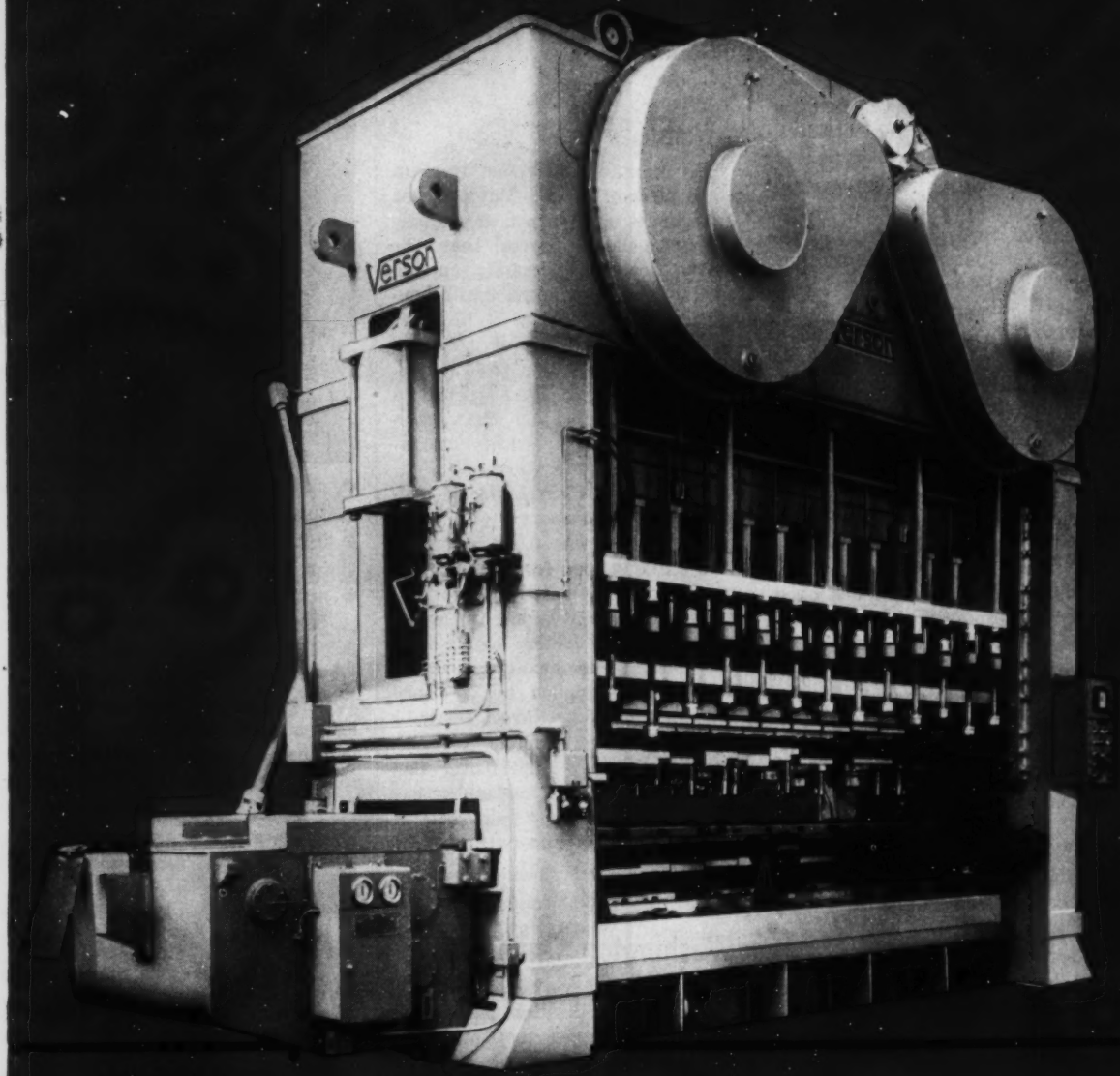
"PROOF-OF-PERFORMANCE" REPORTS FREE!

These reports, giving details of results obtained from Barry Mounts in large and small plants, point the way to important savings in your plant. WRITE NOW FOR YOUR COPIES.

BARRY B MOUNT
BARRY CONTROLS
INCORPORATED
SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES
926 PLEASANT ST. WATERTOWN 72, MASS.

TRADE Verson MARK

TRANSMAT



A typical 600 ton Verson Transmat Press which performs a total of 18,000 press operations per hour on electric motor housings.

FORMING...

The Proven Precision Method for Mass Production Stamping

HERE'S THE PROOF...

COIL CONTAINER

In ten years over 50,000,000 automotive ignition coil cases have been produced by the Verson Transmat Process at a rate of 1300 per hour. The case is blanked and drawn from .15" stock and is 2" in diameter, 5" deep.

WASHER LEG

One of the first intricately shaped parts formed by the Transmat process over nine years ago, this washer leg is 21 1/4" long, 4" wide in 16 gauge steel. It was formed from pre-blanked stock at the rate of 900 per hour.

RANGE DRAWER

Formed on what was described ten years ago as the "world's largest automatic deep drawing press", this drawer measures 15" x 18" x 6" deep. It is formed from .035" coil stock at the rate of 500 per hour.

AUTOMOTIVE SPRING SEAT

One of two types of seats produced on the same Transmat Press, the seat pictured measures 2" by 5 1/4" by 1 5/8" deep. Two at a time are formed from 1/4" stock at the rate of 2200 per hour. In production over a year.

• The production figures quoted above are not theoretical rates computed on the drawing board. They are verified production figures based on day-in, day-out experience over extended periods of time.

Only Verson, the pioneer of Transmat Forming can offer such proof of performance. Only Verson can offer the accumulated experience derived from the building of scores of Transmat Presses over a period of eighteen years.*

Out of this experience has come the knowledge that the first consideration in the design and construction of a Transmat Press must be the production of multi-operation stampings at the lowest possible cost. No other consideration can be allowed to interfere.

Therefore, if you must produce 4000 or more identical stampings daily which require four or more operations, Verson Transmat Presses offer you the best opportunities for slashing production costs. We welcome the opportunity to show you what Transmats can do for you. Write or phone.

**The first Transmat is still in service producing 1300 oil filter shells per hour.*

A Verson Press for every job from 60 tons up.

ORIGINATORS AND PIONEERS OF ALLSTEEL STAMPING PRESS CONSTRUCTION

TRADE Verson MARK

VERSON ALLSTEEL PRESS CO.

9318 S. KENWOOD AVENUE, CHICAGO 19, ILLINOIS • 8300 S. CENTRAL EXPRESSWAY, DALLAS, TEXAS

MECHANICAL AND HYDRAULIC PRESSES AND PRESS BRAKES • TRANSMAT PRESSES
TOOLING • DIE CUSHIONS • VERSON-WHEELON HYDRAULIC PRESSES

The producer of the first rotary printing press proves that you can branch out and conquer new fields. New and old phases are operated at a profit

Assembly and drill fixture for an aircraft pressure bulkhead shows tooling problems that had to be met by technicians familiar only with printing presses

A DIVERSIFICATION STUDY:

From Printing Presses to Aircraft Tools

A PATRIARCH of the printing press business has diversified. The company is now a subcontractor for aircraft tooling.

During the last 18 months, R. Hoe & Co. Inc., New York, has produced over $2 million worth of aircraft tools, jigs and fixtures for Glenn L. Martin Co.'s P6M Sea-Master (Navy jet powered seaplane).

Hoe reports that shipments of aircraft tool assemblies reached 3500 units during 1956. From 15 to 20 per cent of its scheduled 32,000-hour weekly work load has been devoted to aircraft tooling production. Result: It will help Hoe level out the production valleys created by the often spasmodic demand for new printing press equipment.

Problem—When Hoe landed its initial contract, it had personnel with years of experience in making intricate and close tolerance printing press components but no aircraft tool men.

Management decided to depart from standard methods of producing aircraft tooling where a senior toolmaker, with aircraft experience, guides the over-all construction of a tool through a department.

With the help of Martin aircraft experts, Hoe executives concentrated on developing a team of aircraft design personnel which would break down the drawings so production and assembly personnel, with only printing press experience, could understand how to machine components and assemble aircraft tools, jigs and fixtures.

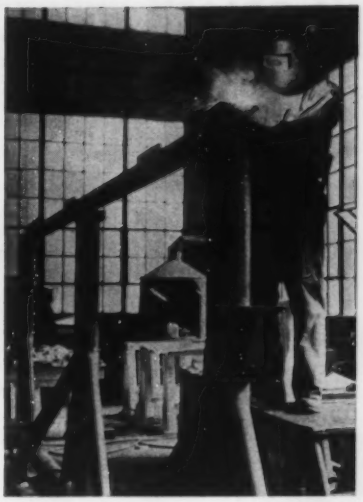
During design breakdown, each component is numbered and in turn is drawn as a separate sketch which is used by the machine operator. At its peak, the new aircraft design section had 40 men with aircraft or related experience. Depending on need, several of the designers are trouble shooters for the various production departments.

Decentralization — Fragmented tool design allows several departments to work on various parts of the final assembly at the same time. Operators receive only the "sketch" of the specific part to be worked. The assembly department receives the complete print.

One pleasant surprise: Personnel who had worked on printing equipment quickly adapted to working on final assemblies of aircraft tooling. While design takes longer this way, decentralized production allows Hoe to turn out tools, jigs and fixtures in six to eight weeks (from design through final assembly and inspection).

Paper Work — All components for aircraft tooling and printing press equipment are controlled by a co-ordinated production schedule. An IBM 604 computer and punched card system provides a department-by-department routing form. It also provides carbon copies for cost analysis and progress reports. The design sketch is included in

Hoe's employees in this aircraft tool design department were schooled in airplane making by experts from Glenn L. Martin Co.



A welder assembles a hull crown cleanup fixture. One function of the tool is to support the plane assembly while holes are drilled

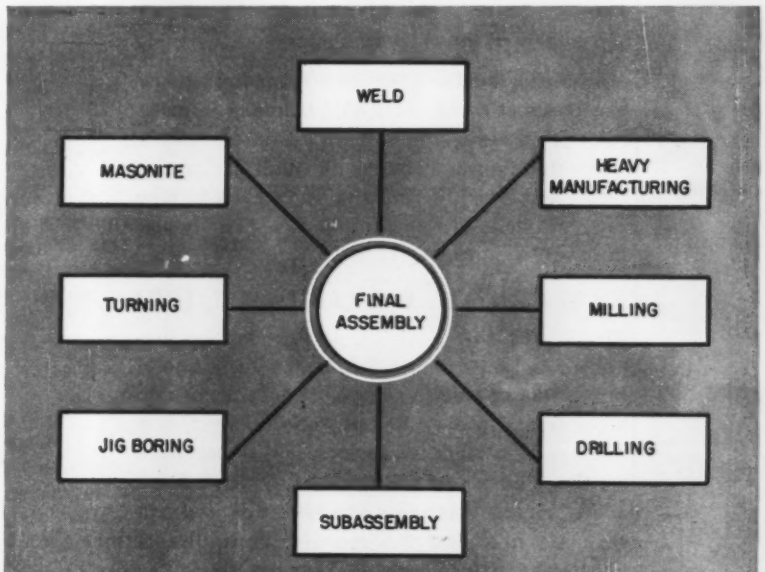
the routing jacket and goes along with the part until it arrives in the final assembly department.

Eliminating the need for a senior toolmaker with aircraft knowledge is one key to reducing machine down time. Under most aircraft procedures, the senior tool man would make the complete tool in his department, using machines (as needed) on the specific job. At Hoe, each operator stays at his own machine and continually produces either printing press or aircraft tooling components. Proof of the success of this method: Shipments for printing and aircraft equipment reached seasonal peaks during the same period last year (May, June, July).

Rundown—The original order is checked by a tool design leader for accuracy and estimate of the time needed to design and produce the tools. Martin co-ordinating engineers participate, so that both supplier and contractor can make immediate corrections if insufficient lead time has been allotted.

Project control men follow through and schedule the new order for the tool design and manufacturing sections. It then goes to the "board men" for breakdown. The segmented drawings are attached to the routing schedule and production of the tool is under way.

Defense Consideration—Through its diversification effort, Hoe has proved that during a national emergency, tooling experts (usually concentrated in the aircraft industry) could account for many times their normal production. These experts can be farmed out as co-ordinators to basic manufacturers employing skilled metalworking personnel. The technique can turn many plants into aircraft toolmakers almost overnight.



Breakdown of complex drawings into simple-component sketches helped decentralize production of aircraft parts. As shown in the diagram, many departments could work simultaneously on one tool, then channel parts to final assembly

NO REASON WHY YOU CAN'T DO IT, TOO!

MUELLER CLIMATROL,
Milwaukee, increases paint mileage 40% with
RANSBURG NO. 2 PROCESS

Typical of the Mueller Climatrol line is this summer air conditioner and gas-fired winter air conditioner, now uniformly painted electrostatically with RANSBURG NO. 2 PROCESS

And, 10 men averaging 40 hours a week now do the work formerly handled by 24 men averaging 50 hours!

Painting used to be a bottleneck in the manufacture of heating and air conditioning equipment at Mueller Climatrol.

But not any more!

When Mueller modernized its finishing department—replacing hand spray with Ransburg No. 2 Process Electro-Spray—daily production was increased . . . finishing costs were cut . . . and quality of the work was improved.

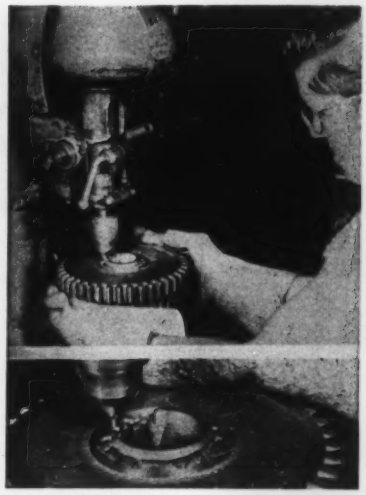
Annually, Mueller coats over 10 million square feet of sheet metal, so a 40% increase in paint mileage—translated into paint dollars saved—is a sizeable figure. Pointing up other savings, a typical run of 400 furnace casings used to take 200 man hours to clean and hand spray. Mueller does it now in 60 hours!

NO REASON WHY YOU CAN'T DO IT, TOO!

Whatever your product, if your production justifies conveyorized painting, chances are one of the Ransburg Electro-Coating Processes can do it better, for less, with improved uniformity and quality of the work. Write for our new brochure which includes numerous examples of both large and small manufacturers of a variety of products who are enjoying the many advantages of *Ransburg Electrostatic Spray Painting.*

Ransburg **ELECTRO-COATING CORP.**
Indianapolis 7, Indiana

RANSBURG



Cut-Rate Cutting

One firm substitutes a drillpress for milling or internal grinding machines with good results

THE drillpress in the picture above is being used to chamfer the splines in a large gear.

It's an example of how an inexpensive drillpress can be used as a substitute for a milling machine or an internal grinder.

End Mill — Bases of internal splines must be chamfered precisely to avoid stress concentrations. A setup like the one shown is used by International Harvester, Chicago.

The cut is made by an end mill with a 45 degree angle. Work is held on a sliding plate. The operator controls the feed of the press with a foot lever. After the spindle is lowered, he slides the plate to bring the cutter into contact with the spline.

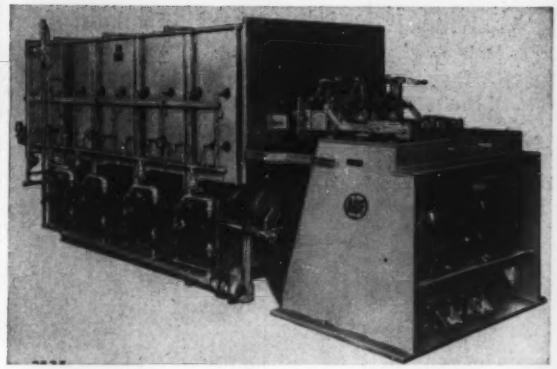
Depth of cut is controlled by a manual setting and visual inspection. The sliding plate gives an operator more precise control than he has when he pushes the piece over a stationary plate.

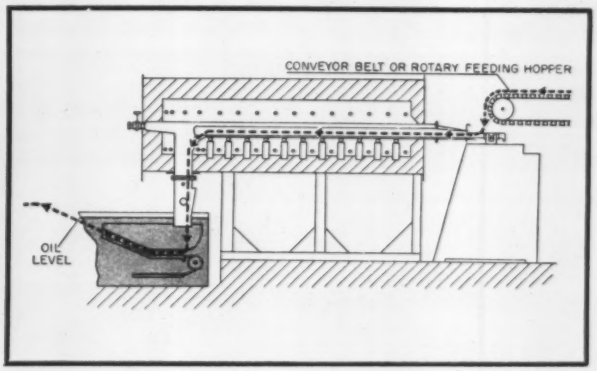
The gear is rotated from tooth to tooth while the tool is chamfering.

Easy—International Harvester found that an operator requires little training to maintain high output and satisfactory precision.

Although a milling machine or internal grinder could do the work faster, the special fixtures and setup time needed make them uneconomical for short runs.

Furnace Heat Treats Two Parts with Different Cycles





Model 243 is a twin hearth shaker furnace that can be used in production line operations.

Two parallel sealed hearths are mounted in the furnace. Each has an individually controlled drive.

The atmosphere and temperature are the same in each hearth, but different parts can be handled because each hearth can operate on a separate time cycle.

Each automatically operated hearth can process up to 800 lb of work an hour.

The radiant muffle tube that the work travels through is heated externally. Small burners heat the muffle—top, bottom and both sides—accurately and uniformly.

The burners are manifolded into multiple control sections for automatic control of the temperature of the various heating zones.

Two types of feeding devices bring parts to the furnace. One is an automatic rotary feeding hopper with capacities of 1 or 2 cu ft.

The other feeder used is a continuous conveyor belt with special flights and hopper which meter parts onto the hearth.

After the work has gone through the reciprocating hearth, it falls through a dual discharge chute into oil, water or other quenching material. The chute extends below the surface of the quench to seal the atmosphere.

The parts fall on a conveyor belt which has a dividing wall to keep parts separated.

Usually, the conveyor carries the parts through a washing machine and a tempering furnace. *Write*: American Gas Furnace Co., 996 Lafayette St., Elizabeth, N. J. *Phone*: Westfield 2-0017

Rubber Contact Wheel Resists Abrasion

Backstand grinding and polishing are done by the X wheel. It is made with a slashed serration and formed of an abrasive resistant Neoprene rubber.

It is impossible to mis-seat the flange because it is an integral part of the wheel and is attached permanently to an 11-gage steel hub.

Serration design makes wheel lands wider than usuai and provides more rubber surface for longer wear. Belts conform well to the wheel. No marks are left on the workpiece.

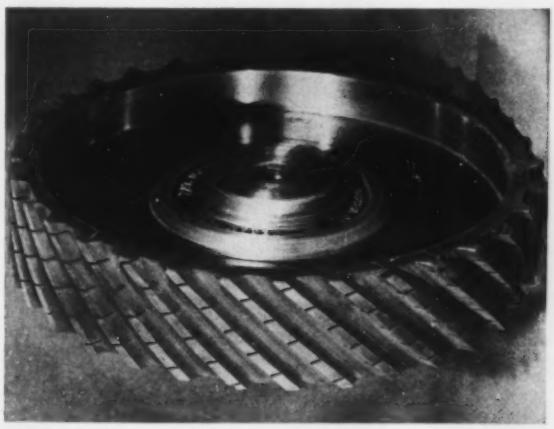
Abrasive belt life is said to be increased as much as 40 per cent. Uses include offhand weld removal, grinding and polishing of gates and parting lines, snagging and finishing on fabricated metal parts.

The wheel has a diameter of 14 in. Face widths of 1, 2, 3 and 4 in. are available.

It is made in several hardnesses. Durometers of 20, 35, 55 and 80 are suitable for most applications.

To facilitate selection, the harder wheels are red and the softer ones are silver gray.

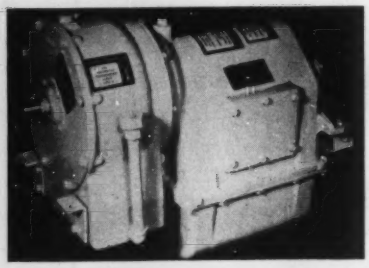
The wheel is made by, and available from, the Chicago Rubber Co., 651 Market St., Waukegan, Ill. For additional information *Write*: Department F7-54, Minnesota Mining & Mfg. Co., 900 Fauquier St., St. Paul 6, Minn. *Phone*: Prospect 6-8511



NEW PRODUCTS and equipment

Hydraulic Drive

This compact, three - element torque converter drive transmission is suited for equipment in the 15 to 30-hp range.



A lever with three positions (forward, neutral and reverse) controls a dual multiple disc clutch arrangement which makes directional changes.

The steel gears are shaved for quiet operation. *Write*: Prime-Mover Co., Muscatine, Iowa

Chamfers Hidden Holes

This two-station Burr-Master countersinks 20 blind holes on an internal diameter of a stator-blade piston for an automatic transmission.

The workholding fixtures are custom built, but the machining concept can be applied to similar automotive and aircraft parts.

Parts are positioned semiautomatically on the work spindle and wedged, then manually clamped. The rotary burr tool is brought into contact at 90 degrees to the work.

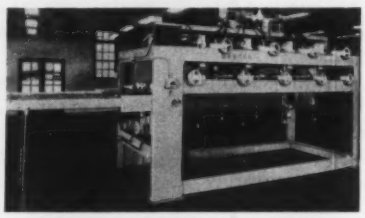
The two stations produce 200 parts an hour. *Write*: Modern Industrial Engineering Co., 14230 Birwood Ave., Detroit 38, Mich. *Phone*: Webster 3-7280

Unit Feeds Heavy Sheets

Steel sheets about ⅛-in. thick are fed to punch presses, shotblasters, roll formers, slitters, trimmers and similar equipment by this machine.

Feeders can be built to handle sheets of any reasonable size. Handwheels position suction cups and magnets for different size sheets.

Suction cups reach down to grip the top sheet and lift it to permanent magnets which hold it until it is pushed into feed rollers which send it to the processing machine. When the sheet passes a predetermined point in the production operation, the suction cups of the feeder reach down and lift the next sheet.



The feeder illustrated delivers six 42 x 120 in. sheets in a minute. *Write*: Dexter Folder Co., 219 E. 44th St., New York, N. Y. *Phone*: Chickering 4-7751

Versatile Spectrometer

Guidance systems, automation devices, precision components and assemblies can be tested by this instrument. Angles and circular spacing can be tested to 0.1 second.

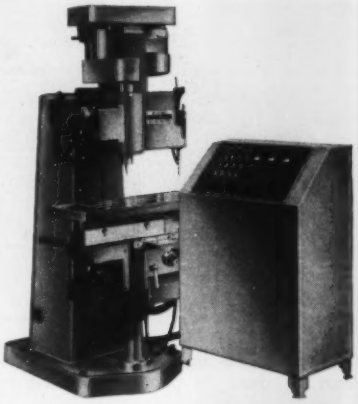
One accurately divided circle is used to read both table and telescope positions. Either the workpiece (mounted on the table) or the telescope can be rotated with or without the circle.

There are two telescopes. One is mounted on the main bearing and counterbalanced. The other is mounted independently on a pillar which fits into a ring on the base of the instrument.

A collimator, also carried on a

(Advertisement)

REPRODUCE WITHOUT TOUCHING THE MODEL — WITH PRATT & WHITNEY VELVETRACE EQUIPMENT

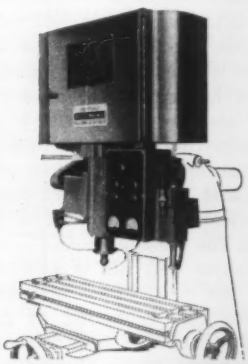


VELVETRACE® MILLING MACHINE . . .

Ultimate in accuracy for 3-dimensional tracer-controlled reproduction. Spindle speeds from 310 to 10,800 rpm. Work size capacity 9″ x 12″.

THE VELVETRACE DUPLEX ROTARY FIXTURE . . .

is easily mounted on the table of the Velvetrace Milling Machine. Offers faster setup and machining, and more desirable feed patterns, for milling a variety of linear or circular work.



VELVETRACE MILLING ATTACHMENT . . .

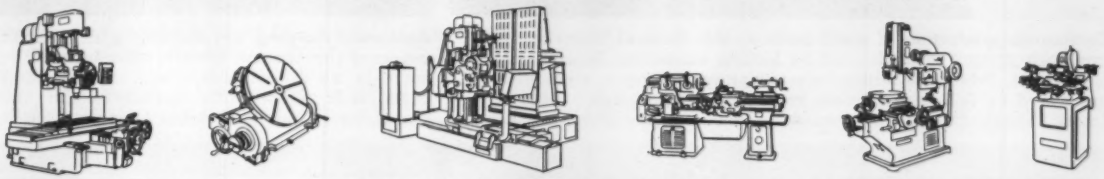
a complete, easily attached unit that brings the outstanding advantages of Velvetrace 3-dimensional tracer control to most conventional milling machines.

Putting PRECISION REPRODUCTION *in a New Light*

BECAUSE THE PRATT & WHITNEY "VELVETRACE"® MACHINE DUPLICATES THE FINEST DETAIL WITHOUT TOUCHING THE MODEL . . .

These flame-shaped light bulb molds, produced for Corning Glass Works, were machined with such fine detail on the Velvetrace that no hand finishing was required.
Ideal for your die, mold, prototype and other work, the Velvetrace employs a unique *non-contacting* tracer control that follows any 3-dimensional model without touching it . . . cannot damage your model, however soft or fragile, even when using the smallest diameter tracer points. Fully automatic operation with variable speed control to compensate for changes in contour, and a wide range of spindle speeds from 310 to 10,800 rpm insures you fast, economical production.

Write for complete information.
Pratt & Whitney Company, Incorporated,
13 Charter Oak Boulevard, West Hartford. Conn.

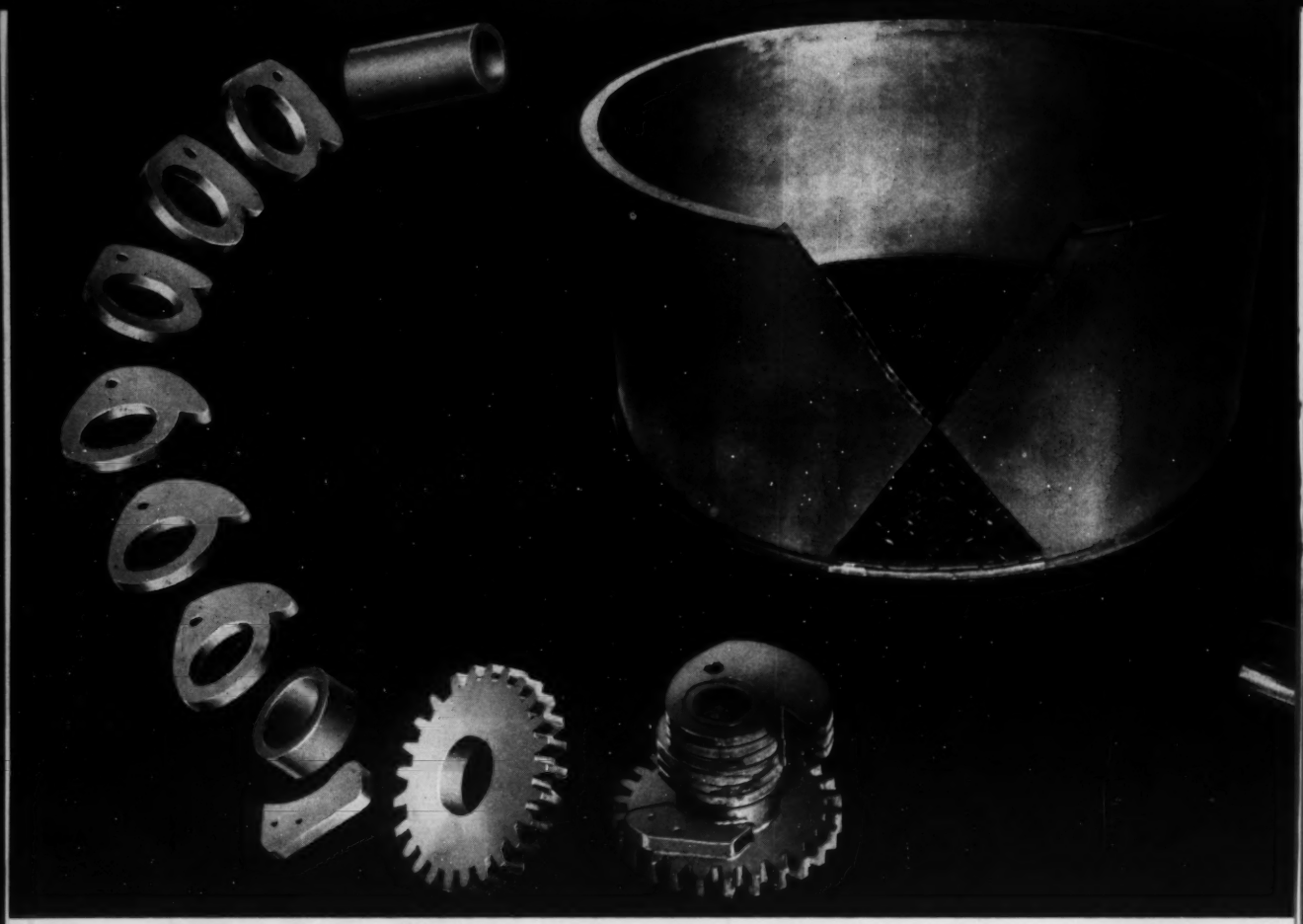


JIG BORERS . . . ROTARY TABLES . . . KELLER MACHINES . . . LATHES . . . VERTICAL SHAPERS . . . CUTTER AND RADIUS GRINDERS

PRATT & WHITNEY

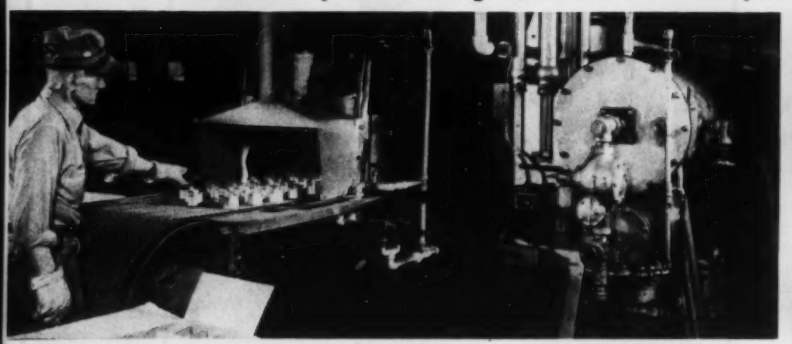
FIRST CHOICE FOR ACCURACY

MACHINE TOOLS • GAGES • CUTTING TOOLS

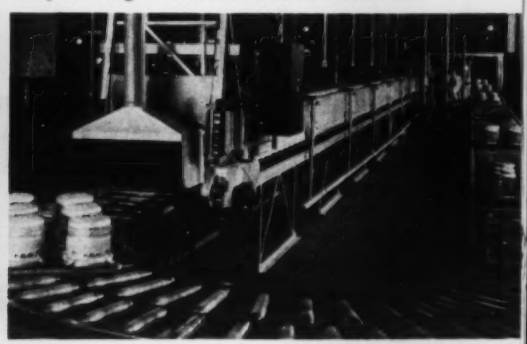


Versatility of furnace brazing is shown in these applications. Complex assemblies like the cam-and-gear cluster on the left can be fabricated from punched laminations brazed securely in a General Electric mesh-belt furnace. Required contours are obtained without expensive machining from solid stock.

Thin sections can be joined to heavy sections to produce light-weight rigid structures without sacrificing strength or inducing local distortion. Honeycomb structure at top center weighs about one fourth as much as solid assembly of same rigidity. It is typical of design improvements made possible by brazing in General Electric furnaces.



Continuous production of small parts in this General Electric mesh-belt furnace is carried out by loading assemblies directly on the belt. Protective atmosphere equipment, at right, eliminates need for flux in most cases, keeps parts clean enough to be passed directly from the furnace, without cleaning or pickling.



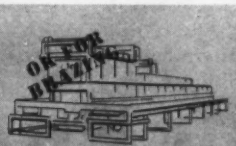
Automatic charging, and discharging and return conveyors of this General Electric roller-hearth furnace make it almost self-operating, reduces handling costs. G-E roller-hearth furnaces handle heavy assemblies and are well suited for automated lines.

GENERAL ELECTRIC SELLS
A COMPLETE LINE OF
HEAT PROCESSING EQUIPMENT

FURNACES • METAL-SHEATH • INDUCTION

Box

Cylindrical Pit

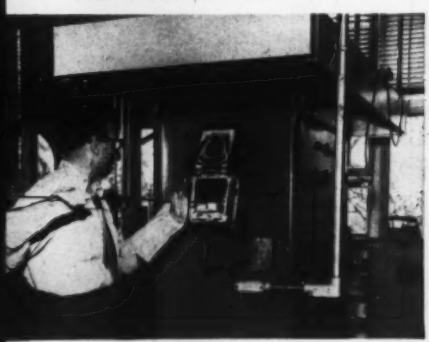


Roller Hearth

Elevator

Produce Complex Assemblies Faster and at Less Cost with General Electric Furnace Brazing

Two or more metals can be joined, as in the bellows housing shown above. The steel flange is furnace-brazed to a brass shell, using preplaced rings of silver brazing alloy. The desirable qualities of each metal are retained.



Development work is done in this General Electric box furnace, which could also be used for job-lot production. Low in first cost, General Electric box furnaces need little maintenance.

General Electric furnace brazing speeds production of really "tough" assemblies—and often does it at less cost than you can do it by your present methods.

For example, here are three types of work where you can improve production with furnace brazing.

You can make complex assemblies from already formed components, and save both material and machine costs.

You can make assemblies of two or more different alloys without changing the desirable characteristics of either.

You can join thin sections to heavy sections without sacrificing strength or inducing local distortion.

These characteristics of furnace brazing can be used in a number of widely different production setups. And General Electric's complete line of furnaces and associated equipment lets you pick the proper furnace to introduce furnace brazing into your particular setup—economically, efficiently.

Cost reductions are typical with furnace brazing because labor content per assembly goes down while output goes up. Waste is reduced since assemblies can be built up of components instead of being machined from solid stock. Uniformity of results frequently leads to reduced inspection costs.

Improved products are the rule with furnace brazing. Life of assemblies is increased because joints have high strength, resist vibration and impact, and are uniformly tight. Assemblies show little or no distortion, since they are free from localized strains. They present a good finished appearance without afterwork because the brazing alloy forms neat fillets. Also protective furnace atmospheres eliminate formation of oxides and do away with the need for flux in most cases.

Increased production over other joining methods is possible, since many joints can be brazed simultaneously. Furnace brazing is adaptable to continuous production, with increasing output.

For a careful analysis of your furnace brazing needs call your General Electric Heating Specialist. Ask him to show you how you can benefit by using furnace brazing. You can reach him at your local General Electric Apparatus Sales Office. If you prefer, send in coupon below for bulletins describing furnace brazing operations and equipment.

GENERAL ELECTRIC

FREE PROCESS BULLETINS

Section H 721-8,
General Electric Company
Schenectady 5, New York

Please send me free bulletins checked below.

MODERN HEAT PROCESSING BULLETINS

- ☐ Furnace and Induction Brazing, GEA-5889
- ☐ Protective Atmospheres, GEA-5907

TECHNICAL BULLETINS

- ☐ How and Where to Use Furnace Brazing, GEA-3193
- ☐ Electric Furnace Brazing, GER-106
- ☐ Furnace Brazing of Machine Parts, GER-339

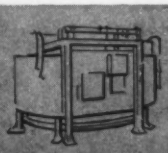
NAME.....

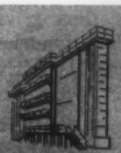
COMPANY.....

ADDRESS.....

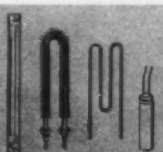
CITY..... **STATE**.....

Mesh Belt


Rotary Hearth


Tower

Cylindrical Belt


Metal-sheath

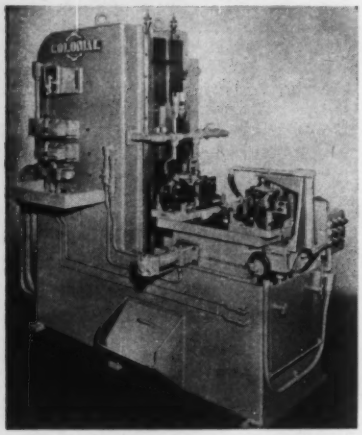
Electronic Induction

NEW PRODUCTS and equipment

pillar, can be set to any desired position around the ring on the base. *Write*: Engis Equipment Co., 431 S. Dearborn St., Chicago 5, Ill. *Phone*: Harrison 7-3223

Broaching Machine

The Ram Press for surface broaching uses an integrated indexing table to increase production. The automatic table uses a 180-degree index and is fed by hand and unloaded automatically.



A 4-ton capacity machine with a 24-in. stroke broaches 1200 rocker arm assemblies in an hour.

Other models are rated at 6 and 10 tons. *Write*: Colonial Broach & Machine Co., P.O. Box 37, Harper Station, Detroit 13, Mich. *Phone*: Jefferson 6-2550

Feeder for Coils

This automatic machine feeds coiled stock of any width or thickness to blanking presses.

The feeding mechanism is mounted on a table which can be raised or lowered to new die levels. A permanent-type spacing bar can be adjusted quickly to obtain the desired length of feed.

The machine operates on compressed air and can be used with any coil and straightener. *Write*: Pollasky Engineering Co., 3802 N. 38th St., Milwaukee 16, Wis. *Phone*: Hilltop 5-6333

Cylinder Manifolds

Any number of oxygen cylinders can be handled by the Oxweld M-35 manifold.

The basic unit accommodates two cylinders, one on each side of the operating controls. Straight or curved extensions are then added in single or double rows to either bank. This makes it possible for the unit to supply any desired amount of oxygen to a piping system.

One bank of cylinders can be operated independently while cylinders in the other bank are in reserve or being changed. When large flows are needed, both banks can be operated simultaneously.

During alternate operation, the reserve cylinder bank automatically picks up the load when the supply in the operating bank is exhausted.

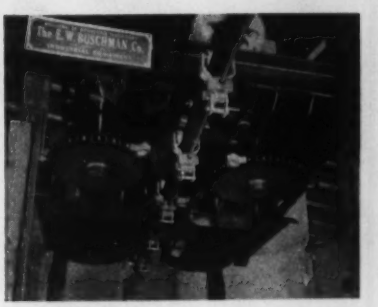
Similar manifolds are available for other gases. *Write*: Linde Air Products Co., a division of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y. *Phone*: Murray Hill 7-8000

Conveyor Drive

With this caterpillar drive, big loads can be handled on close hook centers of overhead cable trolley conveyors. Large radius traction wheel turns can be used on straight conveyor runs.

The drive has two strands of precision chain with special dogs that engage the cable and trolley with equal pressure from both sides. Side thrust is carried by both chains, so that cable movement is transmitted smoothly during engagement. There is no tendency for the trolley to cling to the drive dogs on disengagement.

Large traction wheels guide the cable around idler corners and permit clearance of large packages.

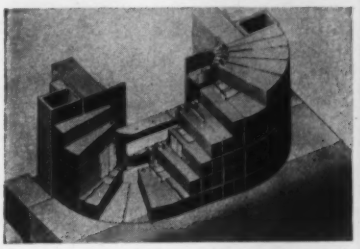


Write: E. W. Buschman Co., Clifton & Spring Grove Ave., Cincinnati 32, O. *Phone*: Mulberry 1-1600

Suspended Door Jambs

Basic refractory front walls of open hearth furnaces can be suspended. The door jamb can be extended from the hearth upward, or the front walls can be suspended above the slag erosion line.

Externally supported tiles are hung vertically and eliminate end thrust from the arcuate nosings.

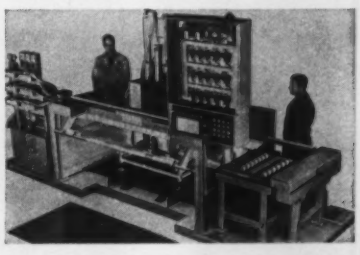


To permit the tiles to be more readily demounted, every other course of tile is inverted and hung from the same pintle that supports the tile below. *Write*: Geo. P. Reintjes Co., 2517 Jefferson St., Kansas City 8, Mo. *Phone*: Harrison 1-3570

Sheet Feeder

This machine automatically processes blanks from a loaded stack through oiling rolls and the press. It progressively feeds scrap out of the press.

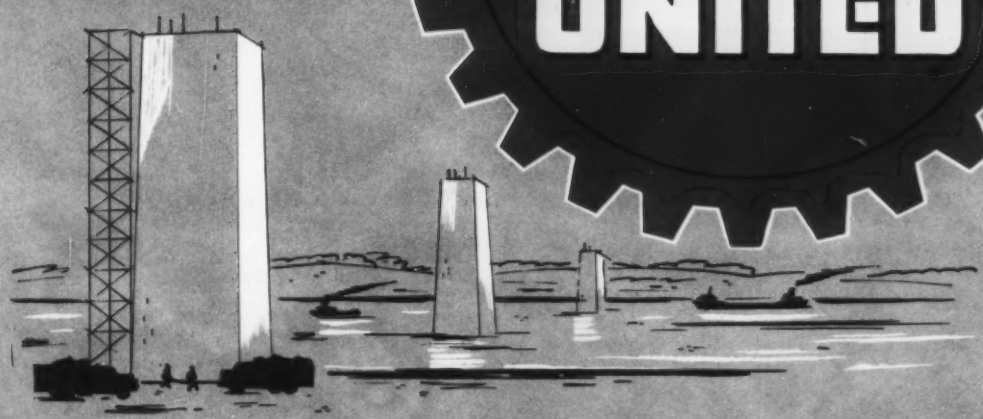
Sheets are picked up from the



CONTINUOUS BAR MILL

Designed and Built by

UNITED



Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses, and other Heavy Machinery. Manufacturers of Iron, Nodular Iron and Steel Castings, and Weldments.

UNITED ENGINEERING AND FOUNDRY COMPANY

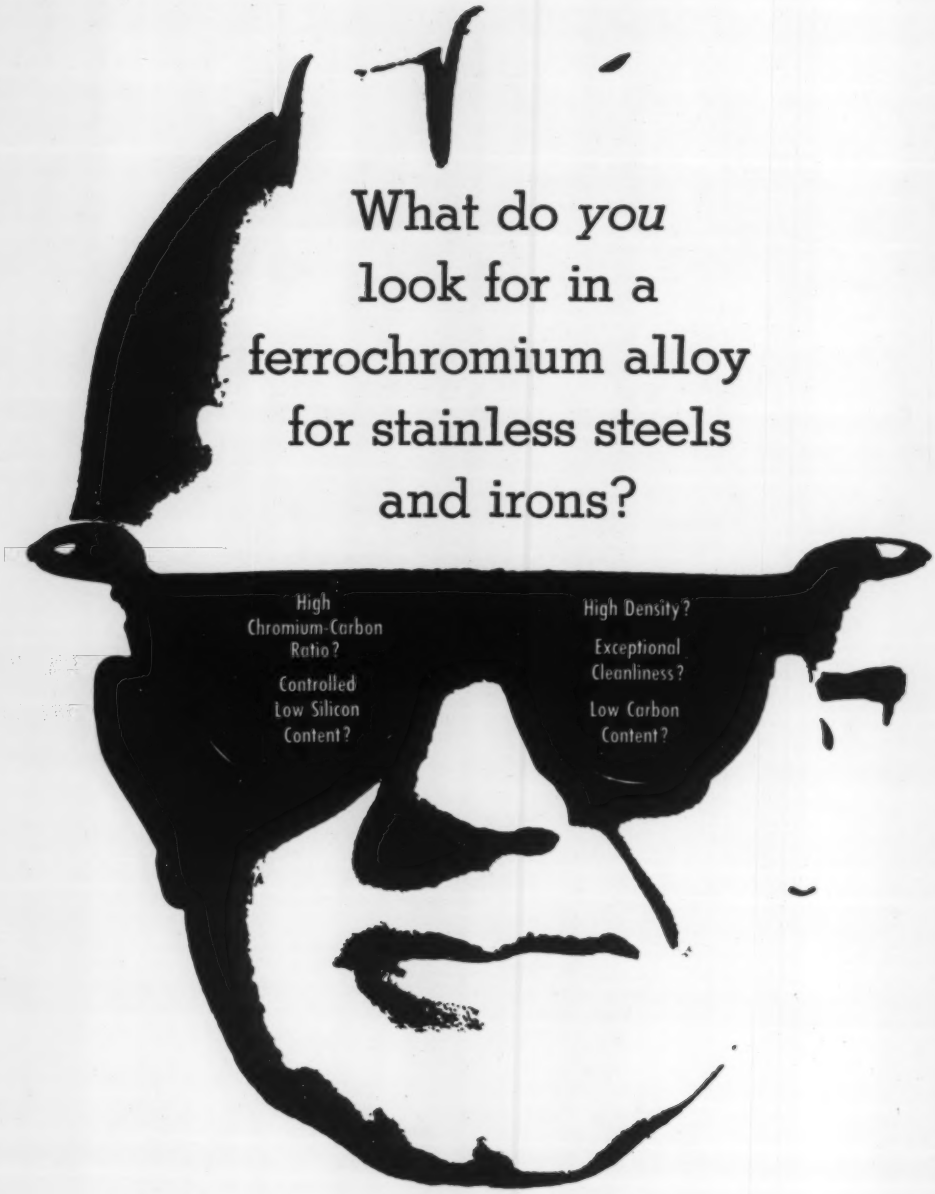
PITTSBURGH, PENNSYLVANIA

Plants at: PITTSBURGH • VANDERGRIFT • YOUNGSTOWN • CANTON • WILMINGTON

Subsidiaries: ADAMSON UNITED COMPANY, AKRON, OHIO

STEDMAN FOUNDRY AND MACHINE CO., INC., AURORA, INDIANA

UNITED *can serve you no matter where in the world you are*



One true ferro alloy has them all –

EXLO®

Extra-low carbon ferrochromium – carbon content .025% max. or .05% max. – to suit your requirements. There's a Vanadium District Office near you. A call to it will bring further details.

VANCORAM

VANADIUM CORPORATION OF AMERICA

420 Lexington Avenue, New York 17, N. Y. • Chicago • Cleveland • Detroit • Pittsburgh

Producers of alloys, metals and chemicals

stack by a vacuum lift and are deposited in the transfer carriage. It, in turn, feeds the sheets through the press.

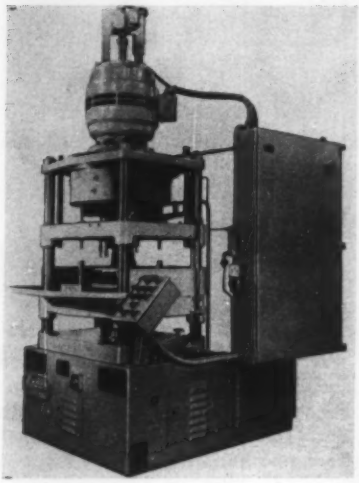
The feeder is powered hydraulically by two pumps which are driven by a 10-hp motor.

Maximum sheet capacity is 78 x 24 x ¼-in. Stacks can be 24 in. high. *Write*: Hautau Engineering Co., 721 Wanda, Detroit 20, Mich.

Machine Drills and Taps

This four-post machine has a hydraulically powered ram which raises the work and feeds it into the rotating spindles of the head.

All holes are machined simultaneously. Holes as close as the sum of their diameters can be drilled or tapped.



Small production runs with changeable hole patterns can be tooled economically. *Write*: Zagar Inc., 24000 Lakeland Blvd., Cleveland 23, O. *Phone*: Redwood 1-0500

Cleaning Machine

Large, odd-size metal products are cleaned and processed by this automatic cabinet type machine.

Wash and rinse cycles are timed automatically. They can be set for any desired time periods, and the operation is automatic.

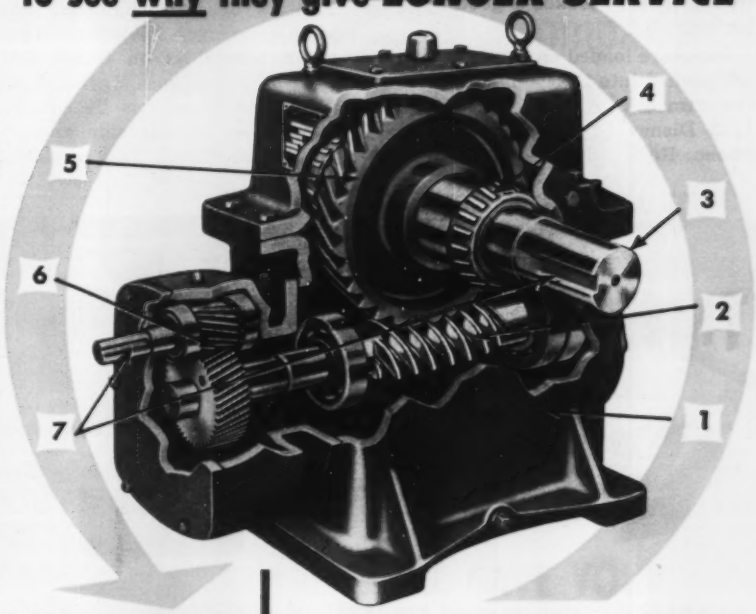
Parts dry quickly because they are cleaned at an elevated temperature.

Combination cleaning and phos-

Look Inside a Foote Bros.

ENCLOSED WORM GEAR DRIVE

to see why they give LONGER SERVICE



1 EXTRA STRONG CAST HOUSING
Provides rigid mounting and alignment of caps and bearings. Made of high quality cast iron.

2 PRECISION ALLOY STEEL WORM
Integral with oversize shaft. Carefully matched to worm gear for quiet, trouble-free service.

3 OVERSIZE OUTPUT SHAFT

4 HEAVY DUTY, EXTRA LARGE BEARINGS
Oversize bearings used throughout unit. Worm bearings are combination single row radial and angular contact ball bearings. Input shaft bearings are single row radial type.

5 WORM GEAR
Precision generated from uniform density, high hardness virgin bronze alloy casting. High load carrying capacity.

6 HEAT TREATED HELICAL GEARS
Shaved for full tooth contact. Pinion integral with input shaft. Gear locked in position on worm shaft extension.

7 Just one of 10 different types, in a wide range of sizes, ratios and shaft arrangements.

One look at the oversize bearings, larger shafts, precision made gearing and the sturdy housing of a Foote Bros. Hygrade Worm Gear Drive tells you that *this* is a workhorse unit that will stand up and deliver under the toughest conditions.

Notice the carefully balanced design . . . greater mass where it's needed . . . the elimination of weight when it contributes nothing to efficiency . . . strength and toughness at the right places . . . the correct gear alloys . . . the compact design, and above all, the simplicity and ruggedness of this unit.

When you know the *inside* story of Foote Bros. Hygrade Worm Gear Drives, you can understand why they have built a reputation for quality, dependability, and performance that is unmatched by others.

Call in a Foote Bros. Field Engineer. Take advantage of our long experience in this business. Let us help you select or specify the most economical drive for your application.

Write for Engineering Manual HGB. It contains complete information on Hygrade Enclosed Worm Gear Drives.

this trademark stands for the finest industrial gearing made

T. M. REG. U. S. PAT. OFF

FOOTE BROS.

Better Power Transmission Through Better Gears

FOOTE BROS. GEAR AND MACHINE CORPORATION
4583 South Western Boulevard Chicago 9, Illinois

phate coating materials may be used in the wash tank. A small amount of chromic acid added to the rinse water provides a basic treatment that makes a good bond for paint.

Parts are loaded on trucks which are pushed into the cabinet. *Write*: Department S, Alvey-Ferguson Co., 1243 Disney St., Cincinnati 9, O. *Phone*: Redwood 1-7000

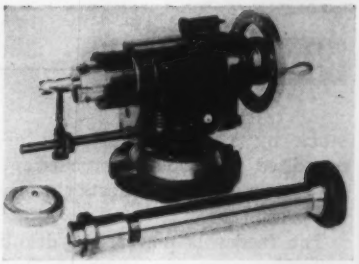
Grinding Fixture

Index grinding, radial relief and end grinding can be done with this tool and cutter grinding fixture.

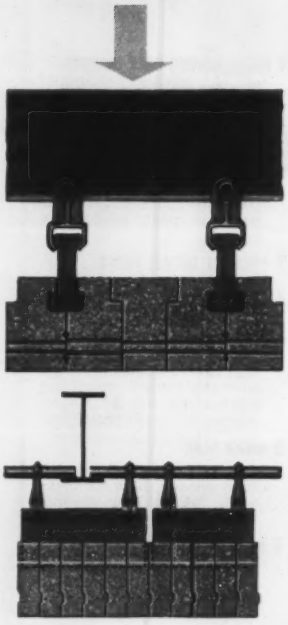
The base of the swivel is calibrated. Interchangeable cams are used for radial relief work.

Centers or lead cams are not needed for finger follow-up reproduction operations on fluted cutters.

The head wheel has 24 equally spaced holes on one side and 35 holes on the other. This combination makes it possible to grind 11 cornered shapes: 1, 2, 3, 4, 5, 6, 7, 8, 12, 24, and 35. *Write*: S & D Engineering Co., 2051 W. Mountain St., Glendale 1, Calif. *Phone*: Thornwall 8-6538



This tile is called a dog bone!



It's a husky supporting tile—used instead of an expensive alloy casting in a double suspended arch designed by B-L for high temperature aluminum, steel and glass furnaces. It can stand extremely high temperatures—can be used with or without insulation.

The dog bone supports the arch tile. Bottom lugs are sloped so that the weight of the arch tile will draw the two together. Filler tile space out the arch.

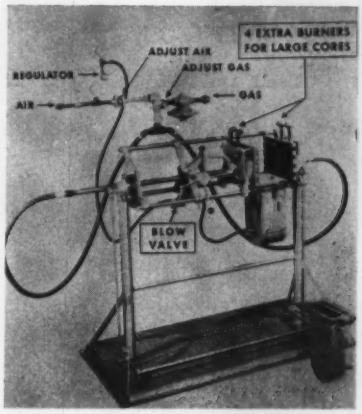
Naturally the completed arch will possess all of the inherent characteristics of Bigelow-Liptak suspended construction. Burned out or damaged tile can be removed without disturbing large areas. Expansion is confined to individual tile—will not accumulate over the entire width of the arch. It all adds up to more production—less down time through keeping heat from raising the roof.

We'd like to tell you more about it. Just write.

BIGELOW-LIPTAK Corporation
AND BIGELOW-LIPTAK EXPORT CORPORATION
13300 PURITAN AVENUE, DETROIT 27, MICHIGAN
UNIT-SUSPENDED WALLS AND ARCHES
In Canada: BIGELOW-LIPTAK OF CANADA, LTD., Toronto, Ontario
ATLANTA • BOSTON • BUFFALO • CHICAGO • CLEVELAND • DENVER • HOUSTON • KANSAS CITY, MO. • LOS ANGELES • MIAMI • MINNEAPOLIS • NEW YORK • PHILADELPHIA • PITTSBURGH • PORTLAND, ORE. • ST. LOUIS • ST. PAUL • SALT LAKE CITY • SAN FRANCISCO • SEATTLE • TULSA • MONTREAL • SAULT STE. MARIE, ONT. • VANCOUVER • WINNIPEG

Shell Core Machine

A small and a large dump box are used with this machine. Heat is applied directly to the core box, and a simple clamping method is used.

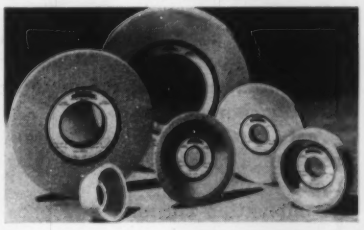


A wide range of core sizes and shapes can be produced. *Write*: Frederic B. Stevens Inc., 1800 18th St., Detroit 16, Mich. *Phone*: Tashmoo 5-0725

Grinding Wheels

SA Borolon wheels are made of a friable aluminum oxide abrasive grain. The grains are free of inner stresses and strains because the individual crystals are produced without crushing.

Each abrasive particle contains



this man is saving his company money...

MAINTAINING EQUIPMENT AT TOP EFFICIENCY

HYPRESSURE **Jenny**

WILL SAVE YOUR COMPANY MONEY...

Cleaning

As you can see, he's cleaning a lift truck with Hypressure JENNY Steam Cleaner. He could be stripping away accumulated oil and grease, to inspect and repaint.

Or he may be cleaning it *before* repairs, so that the mechanic who tears it down and works on it won't need to waste 40% of his time wiping and scraping greasy muck. But whatever his purpose, you may be sure he's saving his company money, for JENNY is one of the greatest time, labor and money saving shop tools any plant can own.

Hypressure JENNY cleans anything . . . anywhere . . . *10 times faster, and better* than solvent-brush-and-scraper methods. JENNY is powerful, portable, and easy to use. Ordinary labor can operate it. With more than 40 models to choose from, there is one to suit your cleaning requirements. Your letter, or the coupon below, will bring you full particulars without obligation.

- Semi-finished Products
- Machinery
- Motor Armatures
- Conveyors
- Cranes
- Lifts
- Floors
- Walls
- Paint Booths
- Windows
- Lavatories
- Exhaust Ducts
- Filters
- Building Exteriors
- Railroad Cars
- Trucks, etc.

. . . and by clean housekeeping, REDUCE THE DANGER OF FIRES IN YOUR PLANT.

DROP IT IN THE MAIL TODAY!

HYPRESSURE JENNY DIVISION

HOMESTEAD

VALVE MANUFACTURING COMPANY

"Serving Since 1892"

P.O. BOX 22 CORAOPOLIS, PA.

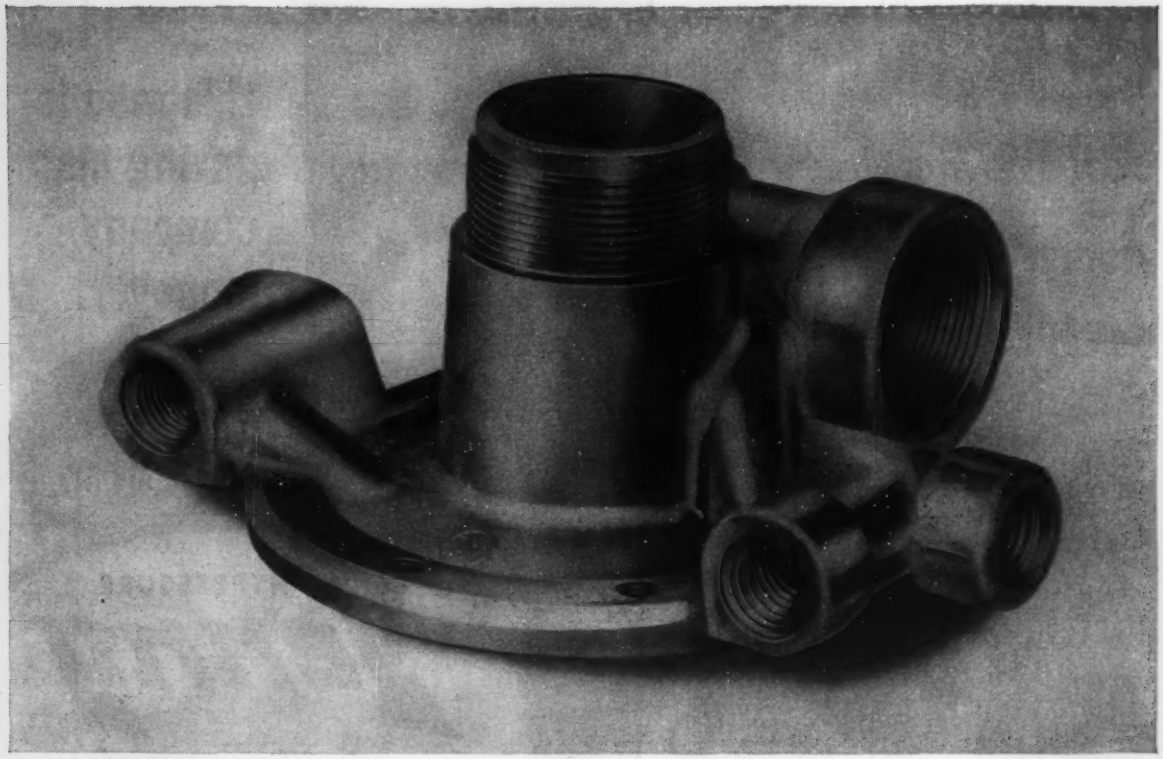
Please send full information on Hypressure JENNY Steam Cleaner to:

Name_____ Title_____

Company_____

Address_____

City_____ State_____

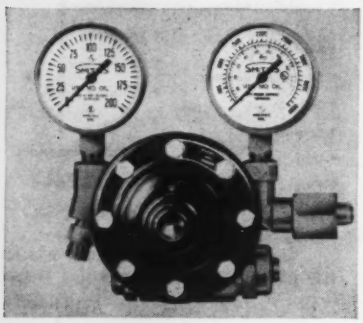


Anaconda Die Pressed Brass Forging after machining, ready for assembly in the gas-pressure regulator shown below.

Better regulators at less cost—with die pressed forgings

Save 25% in first cost—cut machining time, tool cost

Smith Welding Equipment Corp. of Minneapolis uses Anaconda Die Pressed Brass Forgings for gas-pressure regulator bodies as a result of the following analysis of the job.



Smith's two-stage oxygen regulator, Model H313. One of the Smith Welding Equipment Corp. products using Anaconda Die Pressed Brass Forgings.

First, die pressed forgings make a superior product because the twice-wrought metal has the uniformity, denseness, toughness, and strength to prevent gas leaks and to withstand pressures that run in excess of 2500 psi. And second, the forgings do the job economically. The initial cost of the die pressed forging is 25 percent less than the cost of sand castings. In addition, savings are realized in substantially reduced tool costs and machining time. And finally, the forgings are finished in a simple bright-dipping operation, with savings over sand castings estimated at 5 cents a unit.

SHORT CUTS: Anaconda Die Pressed Forgings are short cuts to superior products. Because of their high strength, hardness and resistance to impact, abrasion, and corrosion, they serve better functionally, often replacing more costly built-up assemblies of cast, stamped, drawn, or other machined parts. Their consistent accuracy of dimension eliminates most surface machining to size, permits trouble-free use of drilling jigs, threading or milling fixtures, broaching vises in secondary operations. They are ideally suited to high-speed automatic chucking machines.

The die pressed forging technique is practically unlimited in diversity of shape and field of application. Specialists at The American Brass Company will be glad to submit estimates on the cost of forgings for your critical components. Just submit a sketch or sample of the part involved—or write for Publication B-9. Address: The American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Limited, New Toronto, Ontario. 5766

ANACONDA® COPPER ALLOY DIE PRESSED FORGINGS

Short cuts to superior products

multiple cutting edges over its surface. They increase penetration into work and speed up grinding. *Write*: Simonds Abrasive Co., Tacony & Fraley St., Philadelphia 37, Pa. *Phone*: Jefferson 5-6100

Load Lifter

The type C Pull-A-Way can be used for raising, lowering and pulling jobs. Three models have capacities of 1½, 3 and 6 tons. Standard lift of all units is 5 ft.

The aluminum alloy is drop forged. A double interlock prevents the brake from slipping. Positive control is assured by an automatic notch-per-cycle letdown.

A safety handle prevents serious overloading. *Write*: Wright Hoist Division, American Chain & Cable Co. Inc., York, Pa. *Phone*: 7313

Spotwelding Control

Digitronic is a 3-phase frequency converter control for resistance welding. All timing, sequence and other individual functions are built as individual, interchangeable units.

Cold cathode counting tubes are used to control all timing functions. Timing is accurate because it is monitored directly by the line frequency of the power line.

Individual sets of counter tubes enable independent heat/cool timing cycles for preheat, weld and postheat to be set up. *Write*: Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich. *Phone*: Kenwood 2-2800

Soldering Paste

AMCO 261 is a soldering flux for alloys with melting temperatures as low as 150°F. The flux has a long life and is free of chlorides and rosin compounds.

When the flux is used with conventional solders, the cleaning action starts at about 150°F and continues up to the melting point of the solder. *Write*: American Solder & Flux Co., 19th & Willard St., Philadelphia 40, Pa. *Phone*: Baldwin 6-1800

GET GREATER GRINDER PRODUCTION
BETTER SURFACE FINISHES
LOWER PRODUCTION COST

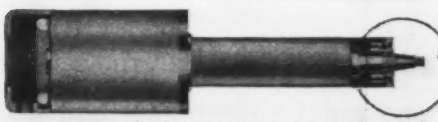
From all your Surface Grinders, new or old

Specify POPE HEAVY DUTY, MOTORIZED SPINDLES

POPE 1, 2 and 3 HP, 1800 or 3600 RPM Surface Grinder Spindles:

- assure continuous production of accurate parts.
- revolve accurately under the heaviest loads.
- permanently lubricated (Pope System) for the life of the bearings.
- have the rigidity to support diamond wheels and to produce *more* good work.
- have the extra rigidity for crush dressing and form grinding.

WRITE FOR PRICE AND DELIVERY.



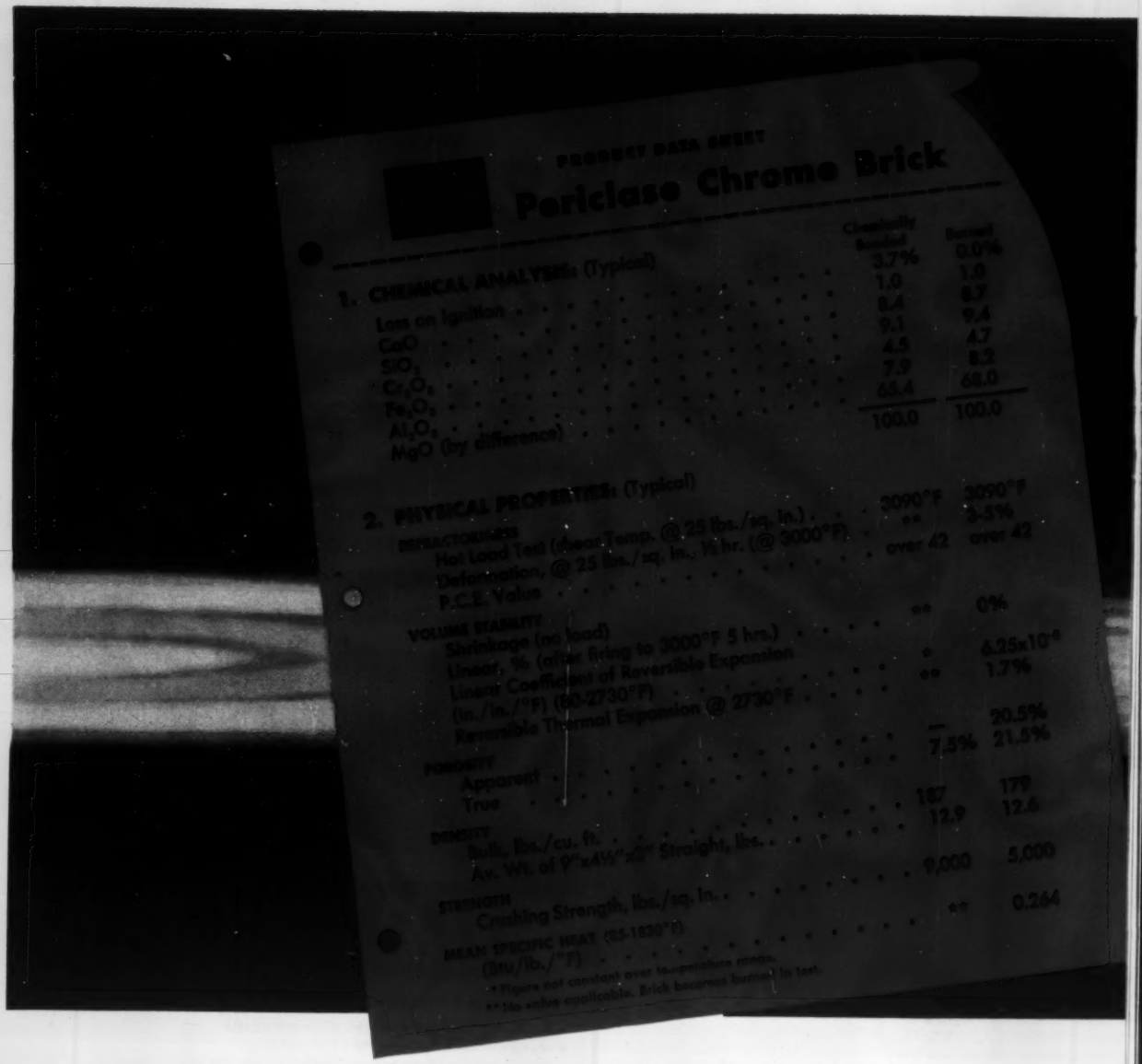
LOOK AT THE BEARINGS! permanently preloaded

These super-precision, double row cylindrical roller bearings have the capacity to assure smooth, chatter-free operation over a long life — give the Spindle the ability to rough off surplus metal fast but maintain its inbuilt precision for producing fine finishes.

Separate super-precision ball thrust bearings eliminate endwise movement of the shaft in either direction.

No. 117

POPE®
DESIGNERS AND BUILDERS OF STANDARD AND SPECIAL PRECISION ANTI-FRICTION BEARING SPINDLES FOR EVERY PURPOSE
POPE MACHINERY CORPORATION · 261 RIVER STREET · HAVERHILL, MASS.
Established 1920



COMPARE THESE SPECIFICATIONS

Here's proof that Kaiser Periclase Chrome Brick can give you the longest and most economical end wall service available today!

One quick comparison between the specifications above and those of *any* other end wall brick will tell you why open hearth operators all over the country specify Kaiser Periclase Chrome Brick:

1. Greatly increases end wall life when needed, or
2. Cuts costs with thinner walls, when end wall service is balanced.

This is because the PATENTED composition of Kaiser Periclase Chrome Brick assures you of less spalling, less swelling, greater resistance to abrasion and alteration by oxide and slag...

Let your Kaiser Chemicals sales engineer explain how you can take full advantage of Kaiser Periclase Chrome Brick in *your* open hearth. Contact the nearest sales office listed at right for immediate attention to your particular problem.

TO THOSE OF ANY OTHER END WALL BRICK!

More reasons why Kaiser Periclase Chrome Brick gives you better service:

1. Chromite content is the minimum amount (only 9.1% Cr_2O_3) necessary to provide thermal shock resistance. Lowering of chromite reduces swelling, thus minimizes end wall buckling.

2. A ceramic bond is formed *before* the chemical bond is destroyed.

3. No liquid phase in forming its ceramic bond. Volume stable.

4. Highest MgO content in end wall brick provides greater resistance to carryover erosion and iron oxide attack.

5. Lowest porosity minimizes alteration by resisting penetration of gases and impurities.

Call or write Kaiser Chemicals Division, Dept. S7224, Kaiser Aluminum & Chemical Sales, Inc., at any of the addresses listed below:

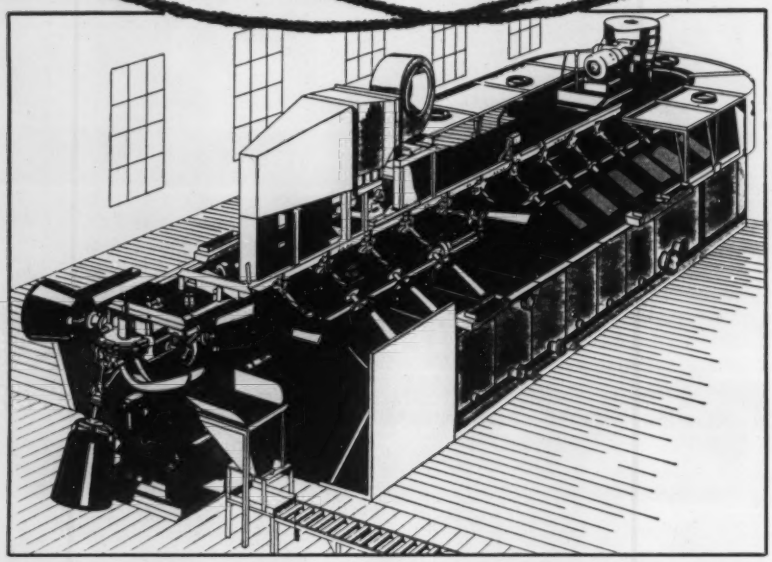
PITTSBURGH 22, PA. . . . . 3 Gateway Center
HAMMOND, IND. . . . . 518 Calumet Building
OAKLAND 12, CALIF. . . . . 1924 Broadway

Kaiser Chemicals

Pioneers in modern basic refractories

REFRACTORY BRICK AND RAMMING MATERIALS • CASTABLES & MORTARS • MAGNESITE • PERICLASE • DEADBURNED DOLOMITE

Barrel Plating by Stevens Really Cuts Costs



Since Stevens first introduced the Automatic Barrel machine scores of industries have enjoyed these operational advantages. Check them against your present operations.

MINIMUM LABOR REQUIRED — In most cases, one unskilled employee can operate the machine.

HANDLES THE COMPLETE CYCLE — Including cleaning, pickling, chromate treatments, plating, bright dip and drying.

COMPLETELY AUTOMATIC — No barrel lids to fasten and unfasten during automatic loading and unloading.

BETTER HANDLING — No mixing of parts. Becomes a part of a straight line production system.

NO HEALTH HAZARD — Occupational health hazards eliminated with ventilation of equipment.

UNIFORMITY OF PLATE — Accurate plating cycles timed to meet your requirements.

FITS ANY PLANT LOCATION — Does not need special buildings—Can be moved at any time. Low head room.

DEPENDABLE — Scores of machines in use. Machine design and construction constantly improved.

LOW INITIAL COSTS — For average operation lowest initial machine costs.

LOW MAINTENANCE COSTS — Proven over years of use and in varied operations

FREDERIC B. STEVENS — YOUR METAL FINISHING SUPERMARKET

Let a Stevens Sales Engineer show you how you can cut costs in your plating operation with a Stevens Automatic Barrel. Write us direct. Frederic B. Stevens, Inc., 1816-18th Street, Detroit 16, Michigan.

METAL FINISHING EQUIPMENT AND SUPPLIES, FROM CASTINGS OR STAMPINGS TO FINISHED PRODUCT

BRANCHES:
Buffalo • Indianapolis • New Haven
Offices in Principal Cities

NEW literature

Write directly to the company for a copy

Control Systems

Advantages of visual industrial control systems for charting data are listed in bulletin IC-1156, 4 pages. Visi-trol Engineering Co., 9345 Hubbell, Detroit 28, Mich.

Freight Car Mover

Bulletin T-122, 8 pages, describes a device which adds flexibility to freight car handling. Whiting Corp., Harvey, Ill.

Screw & Rivet Headers

Solid die, double stroke crank headers for cold heading screw and rivet blanks are described in bulletin 783-A-4, 4 pages. Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.

Power Tools

Catalog 57, 52 pages, describes tools for cutting, shaping, drilling and finishing wood, metal and plastics. Boice-Crane Co., 930 W. Central, Toledo 6, O.

Metal Brushing

Brushes which remove burrs, blending surface junctures, cleaning and finishing are presented in this 4-page bulletin. Osborn Mfg. Co., 5401 Hamilton Ave., Cleveland, O.

Descaling Equipment

A hydraulic machine which removes scale from bars, slugs and rolled mill products before hot working is described in catalog D57C, 35 pages. Commercial Shearing & Stamping Co., 1775 Logan Ave., Youngstown 1, O.

Steel Tubing

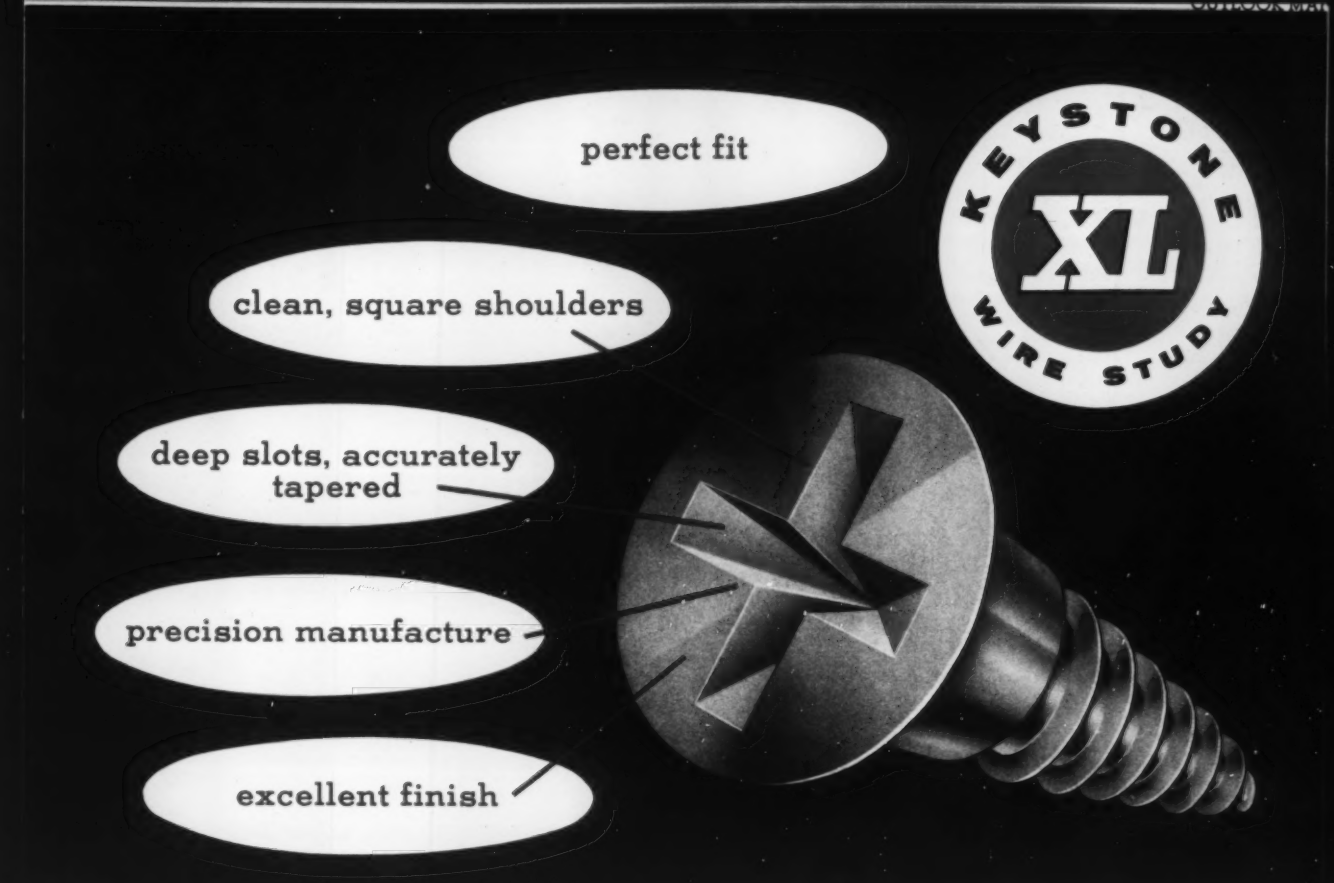
This 8-page bulletin discusses high temperature problems in processing plants. Tubular Products Division, Babcock & Wilcox Co., Beaver Falls, Pa.

Blast Cleaning

Automated techniques for blast cleaning and specifications of 1½ to 27 cu ft machines are included in bulletin 703, 20 pages. Pangborn Corp., Hagerstown, Md.

Hose Couplings

Bulletin 115, 8 pages, covers heavy duty, high pressure hose couplings. Le-Hi Division, Hose Accessories Co., 2704 N. 17th St., Philadelphia 32, Pa.



KEYSTONE "XL" *flowability* is the secret for Reed & Prince Mfg. Co., Worcester, Mass.

Reed & Prince Mfg. Company has been producing many complex cold headed parts since 1886. This progressive firm has found that Keystone "XL" Heading Wire successfully fulfills difficult cold upsetting requirements with substantial savings in time and costs, with longer die life and fewer rejects.

Result: They make longer runs of quality fasteners, like the specially designed Reed & Prince Recessed Head Screw shown above, at lowest possible costs. The flowability of the wire is a prime factor in the manufacture of this precision recessed head screw. Deep, accurately tapered slots with clean, square shoulders provide a perfect fit for the Reed & Prince driver. The surface finish of Keystone "XL" Wire assures excellent plating qualities.

Take a tip from Reed & Prince: If you are having trouble heading complicated parts, talk it over with your Keystone representative. He will gladly help you analyze your wire needs. And if you are presently machining many complex parts, it may pay you to discuss your requirements with a manufacturer of cold headed products. We will gladly give you the names of Keystone "XL" Heading Wire users.

Keystone Steel & Wire Company, Peoria 7, Illinois

KEYSTONE
WIRE FOR INDUSTRY

Brand New...
COLD HEADING FACTS FOLDER
. . . send coupon today!

New folder discusses uses, applications, methods, technical facts, wire requirements.

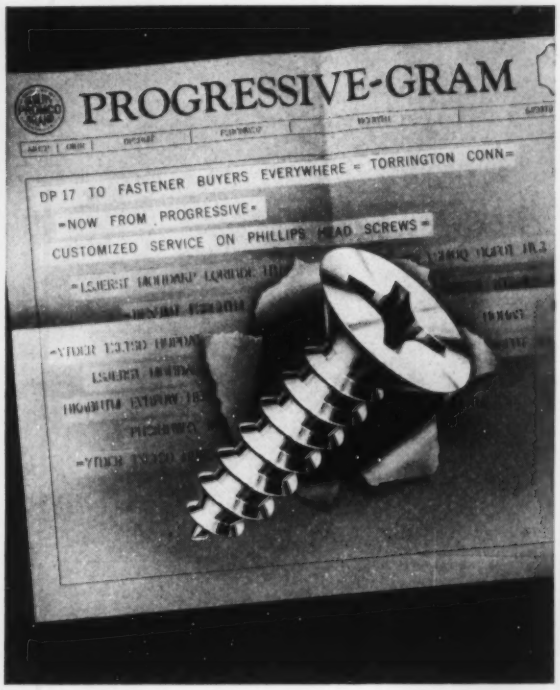
Name_____ Title_____

Company_____

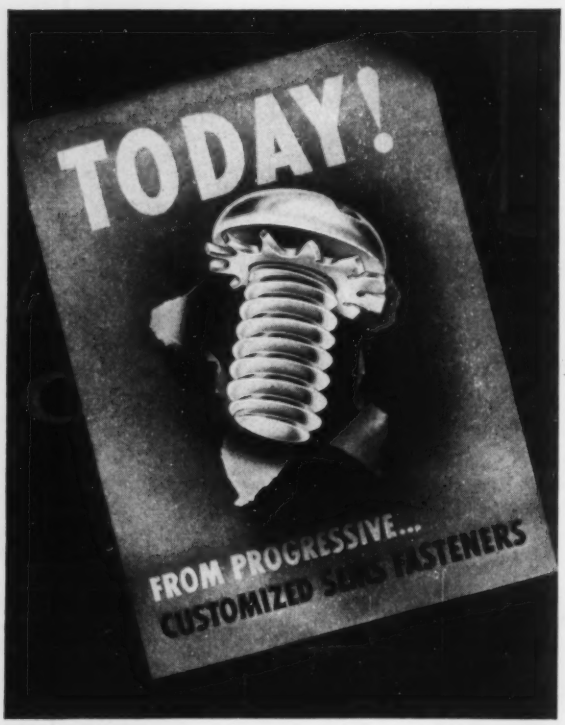
Street_____

City_____ State_____

The news is really sizzling about...


PROGRESSIVE-GRAM
DP 17 TO FASTENER BUYERS EVERYWHERE = TORRINGTON CONN=
=NOW FROM PROGRESSIVE=
CUSTOMIZED SERVICE ON PHILLIPS HEAD SCREWS=

PROGRESSIVE's *Customized* FASTENERS



Now you can get from PROGRESSIVE, these fasteners with an extra customized touch — fasteners which are custom-made to your order. This means: (1) specifically made for you — not bin stock parts; (2) fast, custom-handling of every order; *plus* (3) the double economy of low initial cost *and* the savings in your assembly operations possible only with high precision, torsion-tested fasteners.

STANDARDS AND SPECIALS CUSTOMIZED FOR YOUR NEEDS

THE PROGRESSIVE MFG. CO.

DIVISION OF THE TORRINGTON COMPANY

76 Norwood Street, Torrington, Connecticut

STEEL

March 25, 1957

Market Outlook

STEEL CONSUMERS will add to their inventories in the second quarter to beat a price rise.

This would bring an upturn in steelworks operations in May and June. Before that, the steel operating rate may continue to ease off.

A price increase of $5 to $6 at midyear is a foregone conclusion (see page 147).

Steel inventories in most plants are fairly low for the high rate of consumption. Users will want to do some building of stocks before the price increase.

REPETITION— This will repeat the pattern of several recent years. Users have stockpiled steel before midyear as a hedge against a steelworkers' strike and a steel price increase. The three-year steel industry labor contract, which went into effect last summer, eliminates the threat of an industry-wide strike—but it assures that steel prices will rise.

GUARANTEED— The contract guarantees wage and fringe benefit increases on July 1, 1957, and July 1, 1958, of almost the size that were given last summer—at that time, prices of some common forms and qualities of steel went up an average of $8.50 a ton to cover the cost of the wage and fringe benefit hikes.

The lone incentive (a price increase) will not be as big a buying spur as the combination of a price hike and a work stoppage. Buying to beat price rises is limited by the cost of tying up money and space. It takes a pretty hefty increase to make a big expansion in inventories profitable.

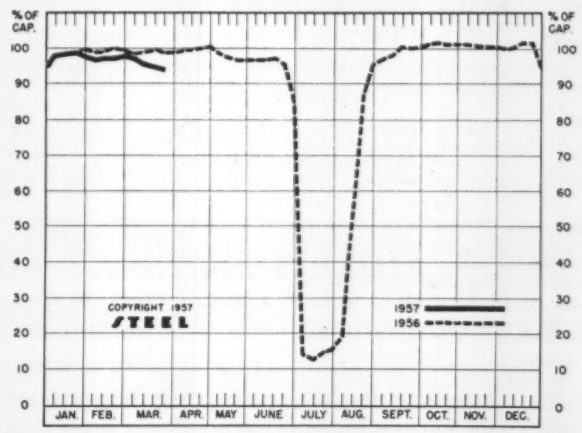
TURN AROUND— Since the steelworkers' strike last summer, most metalworking plants have been aiming at a reduction in steel inventories. A good many users have their inventories down about as far as is safe for current high level usage. Exceptions to inventory reductions are the few products—such as heavy plates and structural shapes—that have been in inadequate supply.

STRAWS IN THE WIND— Signs are appearing that steel inventory reductions are tapering. In some areas, the demand for some steel products is no longer declining, and for others it is picking up slightly. Around Philadelphia, orders for hot rolled and cold rolled sheets are picking up a trifle, and there's belief that May shipments of these products will exceed those of April. Some consumers who deferred shipments originally scheduled for earlier delivery are asking for May deliveries now. At St. Louis, new orders for steel sheets are as good as those in any week in the last 18 months.

HIGH OUTPUT— Orders on the books are still good enough to maintain high steel production. In the week ended Mar. 24, steel for ingots and castings was produced at a rate of 94 per cent of capacity. This is a decline of only half a point from a revised rate of 94.5 per cent for the preceding week. Contributing to the reduction are some wildcat strikes at steel plants and a strike at oxygen plants.

PRICES DECLINE— In contrast with uptrends in prices, ferrosilicon (50 per cent) declined nine-tenths of a cent a pound and silicomanganese went down a cent a pound. Scrap continues its downtrend in price. In the week ended Mar. 20, STEEL's price composite on steelmaking scrap was $48.83 a gross ton, a reduction of $1.50 from that of the preceding week.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

	Week Ended Mar. 24	Change	Same Week 1956	Same Week 1955
Pittsburgh	94.5	— 3*	102.5	97
Chicago	92	— 1*	101	97
Mid-Atlantic	97	— 1	99	92
Youngstown	96	0	84	96
Wheeling	95	+ 3	96	93.5
Cleveland	91	+ 4*	98	96
Buffalo	100	0	105	99
Birmingham	99	+ 3.5	96	87.5
New England	67	+ 1	82	76
Cincinnati	79.5	— 1.5	93	87
St. Louis	102	+11	100	95
Detroit	92	— 1	100	90
Western	106	+ 1	103	96
National Rate	94	— 0.5*	98.5	95

INGOT PRODUCTION‡

	Week Ended Mar. 24	Week Ago	Month Ago	Year Ago
INDEX (1947-1949=100)	148.9†	149.5	153.9	152.5
NET TONS (In thousands)	2,392†	2,401	2,504	2,449

*Change from preceding week's revised rate. †Estimated. ‡Amer. Iron & Steel Institute. Weekly capacity (net tons): 2,559,490 in 1957; 2,461,893 in 1956; 2,413,278 in 1955.

Metalworking Outlook—p. 51

Technical Outlook—p. 99

FAST FASTENERS FOR FASTER PRODUCTION

With the race on for better products at lower costs, production men everywhere are turning to time and labor saving devices of all types. Eaton-Reliance Keps will fasten assemblies in a minimum of time with a maximum of efficiency.

The tooth type washer preassembled, freely rotating on the nut, permits a quicker assembling of the part, time savings, increased production, an elimination of lost parts, and exactly balanced inventories. They are made to "funnel" onto the bolt providing easy starts.

Keps can be hopper fed thus providing the additional advantage of automatic assembly. Investigate this new efficient fastening device and profit by these savings as hundreds of other quality product manufacturers are now doing.

Additional information supplied upon request or a Fastening Engineer will call without obligation.

EATON — *RELIANCE DIVISION*

MANUFACTURING COMPANY

514 CHARLES AVENUE • MASSILLON, OHIO

SALES OFFICES: New York • Cleveland • Detroit • Chicago • St. Louis • San Francisco • Montreal

PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater-Defroster Units • Snap Rings Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers

How Much Steel Prices Have Risen

Increases computed from base prices and typical extras as recorded by Bureau of Labor Statistics, U. S. Department of Labor

	Increase per net ton after steel strike, 1956	Increase per net ton in last 3½ months
SHEETS		
Hot rolled, carbon	$7.00	$5.00
Cold rolled, carbon	8.50	3.00
Galvanized	9.00	Unchanged
Cold rolled, stainless, type 302	90.00	50.00
Electrical	21.00	Unchanged
STRIP		
Cold rolled, carbon	$12.00	Unchanged
Cold rolled, stainless, type 430	62.00	Unchanged
Hot rolled, carbon	5.88	$2.00
PLATES & SHAPES		
Plates, carbon	$7.00	$7.00
Structural shapes	8.00	8.00
TIN MILL PRODUCTS		
Tin plate, hot dipped, 1.25 lb coating	$2.11	Unchanged*
Tin plate, electrolytic, 0.25 lb coating	2.11	Unchanged*
Black plate, canmaking quality	2.11	Unchanged*
BARS, HOT ROLLED		
Alloy	$11.00	$2.50
Stainless, type 303	66.00	50.00
Carbon	8.50	3.00
Reinforcing	8.50	1.00
BARS, COLD FINISHED		
Carbon	$12.20	$6.00
Alloy	18.00	3.50
Stainless, type 302	66.00	50.00
TOOL STEEL		
Bars, carbon	$40.00	Unchanged
Bars, alloy, oil hardening die	50.00	Unchanged
Bars, hot rolled alloy, high speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60	178.00	Unchanged
Bars, hot rolled alloy, high speed, W 18, Cr 4, V 1	178.00	Unchanged
WIRE & WIRE PRODUCTS		
Wire, drawn, carbon	$12.00	$12.00
Wire, drawn, stainless, type 430	80.00	Unchanged
Bale ties	19.88	Unchanged
Nails, wire, 8d common	15.46	Unchanged
Wire, barbed	12.88	Unchanged
Woven wire fence	17.73	Unchanged
TUBULAR GOODS		
Pipe, black, buttweld	$12.10	$4.55
Pipe, galvanized, buttweld	12.10	4.54
Pipe, line	11.47	6.48
Casing, oil well, carbon	12.93	7.52
Casing, oil well, alloy	16.03	9.32
Tubes, boiler	23.21	4.22
Tubing, mechanical, carbon	25.68	6.28
Tubing, mechanical, stainless, type 304	140.78	180.00
RAILWAY MATERIALS		
Rails, standard, No. 1	$7.00	$4.00
Rails, light, 40 lb	7.00	5.00
Tie plates	8.00	5.00
Axles, railway	12.00	9.00

*Tin mill products will rise an average of 4.5 per cent on Apr. 30.

Steel To Rise $5-$6

Midyear wage increase to steelworkers will bring another advance in prices

STEEL PRICES have been pushing upward for the last three and one-half months—and they'll go up some more at midyear when steelworkers get a wage increase guaranteed under their three-year labor contract.

Look for a hike of $5 to $6 a net ton—a little less than last August's when prices were hoisted to help cover the wage increase granted then. Also look for the changes to be made as they were last August: Through the upward revision of base prices.

Trends—Prices of some of the common forms of carbon steel went up an average of $8.50 a ton last August, and producers said this was not enough to cover production cost increases originating from the wage increase. Midway through last December, steel producers began to adjust price extras (charges for specific qualities, sizes and packaging). Such advances have continued. They average about half as much as last August's increases (see accompanying table), although there are some exceptions. Plates, structurals and carbon wire have risen as much since mid-December as they did last August and one specialty—stainless mechanical tubing—has gone up more.

Producers explain that the increases in extras are to help cover material and transportation cost increases stemming from last summer's round of wage hikes.

Restraints — While employment cost increases this year will be about as much as last year's, two factors work against passing them along in full: Demand for steel is lighter, and the steel industry feels a responsibility to help restrain inflation.

Cost of Labor—U.S. Steel Corp. says in its 1956 report that under the labor contract its employment costs will rise about 7.6 per cent in the first year, or about 24 cents an hour. Additional costs in the second and third years will approximate 5 per cent each year. Cost of living increases under the

contract can add further to these costs. (They are based on the government's consumer price index.) One such increase (3 cents an hour) has already been given—on Jan. 1, 1957. The consumer price index has risen almost steadily for the last year.

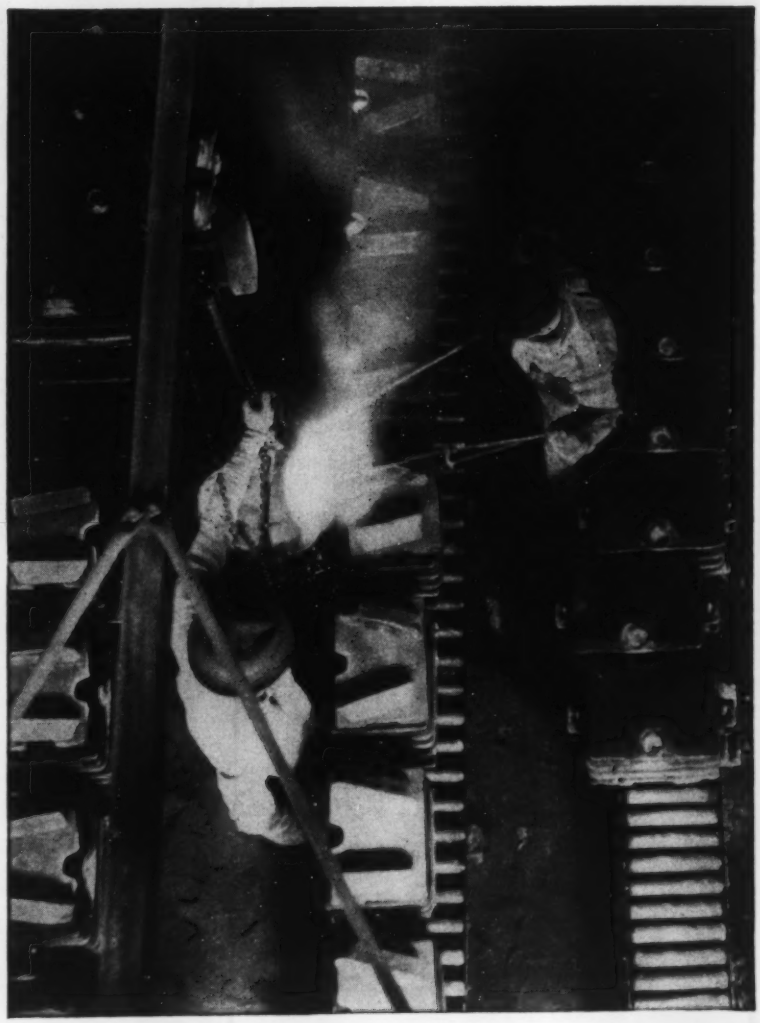
Sure Thing—While the reduced demand for steel will be a restraining influence, it isn't soft enough to prevent an increase. In 1954, a year of steel inventory reduction in which steel ingot production was only 88.3 million tons, the steel industry raised prices to help cover a wage boost. Steel demand is stronger than it was in 1954. The outlook for 1957 is about 120 million tons of ingot production.

Problem — The steel industry contends that its prices have lagged behind the country's economy for a long time. Industry economists say: "Steel prices were depressed by the economic blight of the 1930s, frozen by government decree during World War II and the Korean War, and outrun by postwar inflation."

Joseph L. Block, president, Inland Steel Co., Chicago, says in his company's 1956 annual report that still higher price levels are needed to offset accumulated inflationary pressures built up in the last 15 years.

Program — "Price advances should, of course, be gradual," he says. "Such action, together with continual cost reduction through technological improvement and revised legislation on depreciation allowances, could constitute a program which would enable Inland and the steel industry in general to provide the vastly increased steel production facilities which will be required by the American people in the years ahead. Only through such a program can a privately operated steel industry be maintained," Mr. Block declares.

Even with the price increases of the last eight months, Inland has been unable to increase its return on sales and invested capital. The company's net earnings per dollar of sales slipped to 7.29 cents in 1956 from 1955's 7.95 cents. The 1956 return is even less than the 7.74 cents of 1954, and only a trifle more than the 7.23 cents of 1949, both poor steel production years, compared with 1956.



FEDERATED SILICON BRONZES
have ductility of 50% or better, with tensile strength up to 65,000 psi.

FEDERATED ALUMINUM BRONZES
heat treated, have tensile strength as high as 120,000 psi with correspondingly high yield strength.

FEDERATED MANGANESE BRONZES
have as-cast tensile strength as high as 125,000 psi with good ductility and high hardness.

FEDERATED ENGINEERED BRONZES
all have excellent corrosion resistance.

FEDERATED products:

Aluminum, Babbitts, Brass, Die Casting Metals, Fluxes, Lead and Lead Products, Magnesium, Plating Materials, Solders, Type Metals, Zinc Dust

Have you had trouble with Engineered Bronzes?

The truly engineered bronzes . . . silicon, aluminum and manganese bronzes . . . give desirable combinations of properties not available in any other metals.

If you need the physical characteristics of the engineered bronzes, but if you have had difficulty in achieving them in castings, it will be worth your while to try again with Federated products.

It is difficult to make these bronzes and only many years of experience and rigid quality control will produce the metallurgical qualities desired. At Federated, ingredient specifications are adhered to rigidly. Continual spectrographic and chemical controls are used during the alloying process. Experienced metallurgists are in charge. Performance specifications are always met or exceeded.

Let us tell you more about these valuable alloys. A Federated field man will be around to see you soon. Talk to him. It will benefit you.

Federated Metals

Division of

AMERICAN SMELTING AND REFINING COMPANY

120 Broadway • New York 5, N.Y.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 158 & 159

Demand for sheet steel continues disappointing. But suppliers think auto inventories are so low they will have to be rebuilt if heavier auto production schedules are to be maintained during the second quarter.

Specifications for both hot and cold-rolled sheets have picked up a trifle at some points, and the general opinion is that May shipments will top those in April, due largely to consumer deferments of tonnage originally scheduled for earlier delivery.

New England sheet and strip users are placing April orders, but they are well short of normal lead time. Orders approximate consumption, but the character of ordering for May-June points to some inventory procurement, and also some price hedging. Higher prices are expected after midyear to offset wage increases.

In the Midwest, the belief prevails that May should see an upturn in sheet deliveries. So far incoming orders have not borne this out. The normal 45 days lead time has expired, but sheetmakers can give prompt deliveries, so this doesn't mean much. Seasonal upturn in galvanized sheets has not developed.

New sheet orders in the St. Louis district show improvement. Last week volume topped that of the previous week, and tonnage was equal to that in any week during the last 18 months. Producers are booked to capacity through May.

Steel Shipments Set Record

Shipments of finished steel products totaled 7,809,451 net tons in January, reports the American Iron & Steel Institute. That was a record for the month, topping the December, 1956, total (7,064,093 tons) by 745,358 tons, and comparing with the former January (1956) record of 7,587,870 tons.

Oil country goods shipments were at a new high of 271,293 net tons in the month, exceeding the former record of 256,976 tons shipped in October, 1956.

Two markets received larger tonnages during January than in any previous month. A record 225,681

tons went to the oil and gas warehouses, slightly more than the former record of 223, 587 shipped in October, 1956.

Shipments for construction, including maintenance, in the oil and gas market were also at a new high, 288,460 net tons, compared with the previous record of 284,-483 tons during June, 1955.

Steel Bars . . .

Bar Prices, Page 157

The market situation in commercial bars is little changed. Chicago area mills find no reason to shorten rolling cycles, but such adjustment may occur in the next cycle unless demand strengthens. In the East, demand is steady with specifications described as good for large rounds and flats, and fair for most other sizes.

Supplies in general are plentiful. Some hot-rolled and cold-drawn carbon bar tonnage is still available for April shipment. The same is true of alloys in certain sizes and types.

Sellers to New England consumers think May order volume from that area will likely be better than April's. Nearby orders are restricted by two factors: Prompt mill shipments and balanced inventories. District forge shops are not carrying large inventories, and in most cases their May requirements will be up some, depending on automotive releases that month.

Pittsburgh sellers think April order volume will be the smallest in the first half.

Wire . . .

Wire Prices, Pages 159 & 160

Inquiry for merchant wire products is slow. But sellers are confident that spring will bring the usual seasonal improvement in agricultural and building requirements. Demand for manufacturers wire continues to lag.

Midwestern wiremakers anticipate a good spring demand for merchant products, but orders so far are slow to develop. Until auto production expands markedly, it is thought that orders for manufacturers wire will lag.

While there are only limited backlogs with mills in the St. Louis area, production is holding up well there. The slow start of the building season is said to be holding up mesh shipments.

The base price on merchant quality wire, 6 to 8 gage, has been advanced $5 a ton for annealed and $8 a ton for galvanized.

Tin Plate . . .

Tin Plate Prices, Page 159

Other producers are following the lead of U.S. Steel Corp. and are advancing tin plate prices for the contracting period beginning Apr. 30. Republic Steel Corp. announced action last week, increasing prices at its Niles, O., mill to $8.75 per base box for 25-lb coated electrolytic plate, and $7.85 for black plate.

Jones & Laughlin Steel Corp. has shipped the first "king-sized" coils of tin plate for can manufacturing from its Aliquippa (Pa.) Works.

The 15,000-lb coils were transported by rail to the American Can Co.'s plant in Tampa, Fla. Traditionally, can makers have purchased packages of cut sheets.

ERIE Bolts • Studs • Cap Screws • Nuts
In Alloys • Stainless • Carbon • Bronze

Designers and engineers from every field of industry submit their exacting specifications to us for special fasteners to resist corrosion, extremes of temperature, tensile, fatigue, impact, and shear stresses. For more than 40 years our skilled craftsmen have met the requirements of construction and farm machinery, of transportation, refining and railroad equipment, the heavy machines of industry, pressure vessels, compressors, pumps, in widely diverse applications. We are prepared to serve you well. Send us your fastener specifications for prompt estimate.

A SUBSIDIARY OF BARIUM STEEL CORPORATION

ERIE BOLT & NUT CO.
Erie, Pennsylvania
Representatives in Principal Cities

Some coils have been shipped, but their size was limited to 7500 lb.

Canmakers hope the move will add efficiency and economy to their operations.

The "king-sized" coils are being shipped on pallets with the core vertical. This enables two or three coils to be placed on top of each other in storage. Initial shipments are in standard gondola cars, but J&L has used regular boxcars for the big coils.

Tubular Goods . . .

Tubular Goods Prices, Page 161

Pipe requirements for the building industry continue to lag. Construction is expected to gain next month with attending pickup in pipe demand. Sluggishness in the housing market is being reflected in the slowness of incoming orders for April shipment pipe.

While buttweld pipe is moving slowly, demand for seamless pipe continues brisk, and indications are producers will entertain a strong demand throughout the second quarter. Oil country goods producers are sold out for the second quarter.

Line pipe requirements are heavy, and the volume of business in this area is stimulating orders for smaller pipe required for feeder lines. The utilities are placing large orders for pressure pipe.

Demand for steel pipe is increasing in the Pacific Northwest market. Cast iron pipe inquiries also are developing in the area, the largest involving 700 tons for Seattle.

Plates . . .

Plate Prices, Page 157

While light-gage plates are in noticeably easier supply, reflecting increased strip mill production, the situation in heavy-gage plates is not changed much. Demand pressure for heavy gages is somewhat less intense, but consumers continue to show interest in conversion tonnage which can provide sizes and thicknesses not otherwise to be had, except on extended delivery.

Indications are heavy plates will not be in adequate supply in the foreseeable future, despite the improvement in the over-all market resulting from the heavier output of strip mill plates.

Pittsburgh district sellers report that deliveries from all but the widest mills are improving. The supply situation of plates over ½-in. thick is far from easy.

Warehouse . . .

Warehouse Prices, Page 162

Warehouse operators continue to expand and round out their inventories of all products except heavy plates and structurals. Sales generally are holding up reasonably well, though demand pressure is somewhat easier. Philadelphia area distributors think March will be their best month so far this year, both dollarwise and tonnagewise.

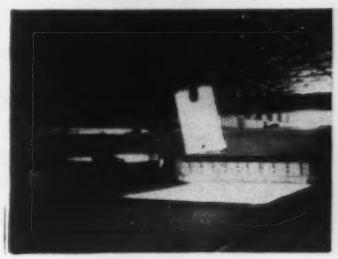
Orders for carbon steel products are up slightly in the New York market—about 5 per cent compared with volume in the first two months this year.

Improved deliveries and larger supplies of sheets and bars have reduced fill-in buying of those products at the warehouse level.

Open Hearth Furnaces—Photo Courtesy Jones & Laughlin Steel Corp.

Continuous Heating Furnaces—Photo Courtesy Crucible Steel Co.

Soaking Pit—Photo Courtesy United States Steel Corp.



Heat Treating Furnace—Photo Courtesy Taylor Forge & Pipe Works

Increase Production . . . Lower Production Costs with

LOFTUS Industrial FURNACES

For years Loftus Industrial Furnaces have been providing dependable, economical service to the steel industry. Their long life and efficient performance have been proved by time. The fact that they materially contribute to lower-cost operation and increased production is a matter of record.

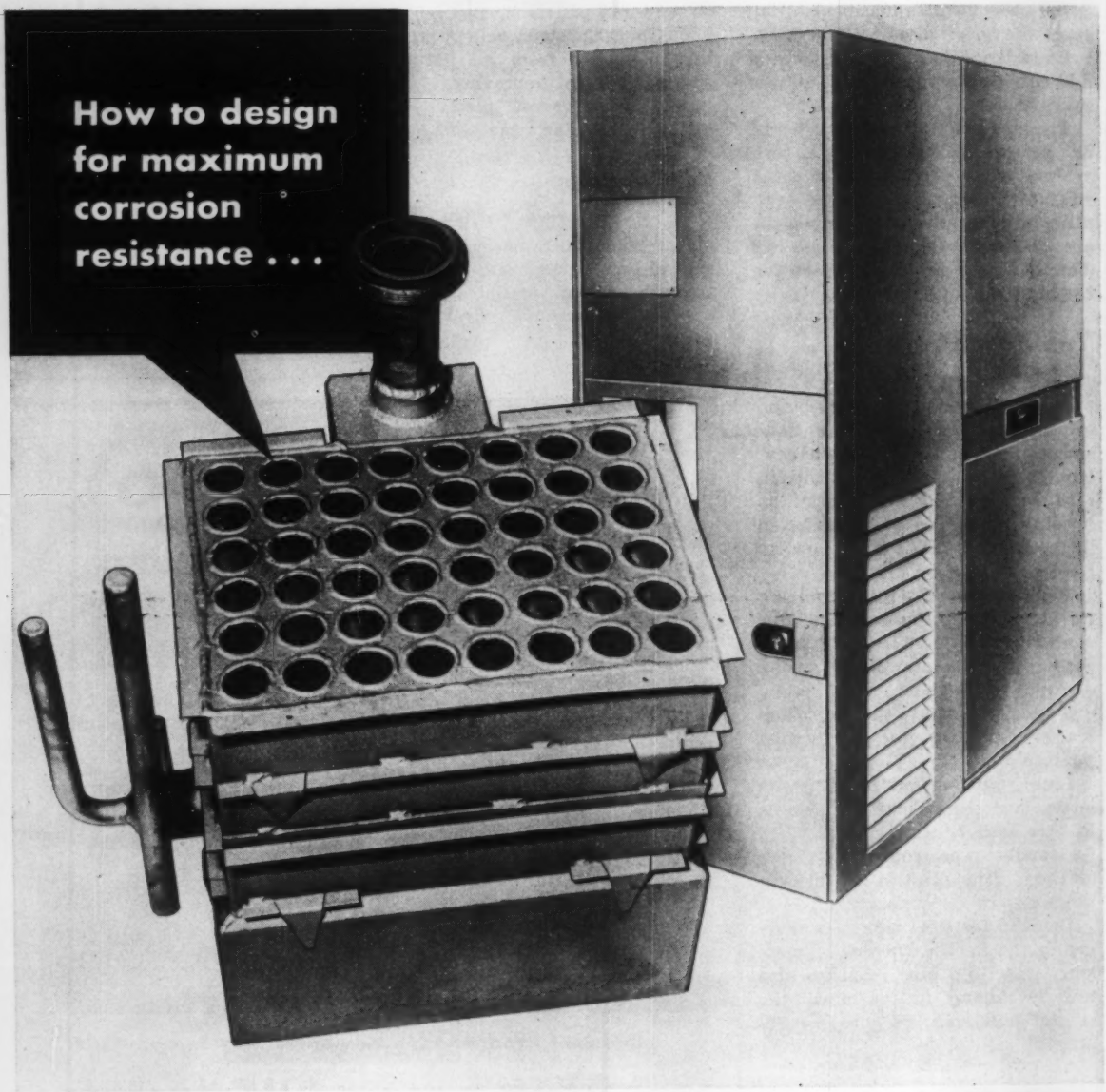
Whatever your heating, melting or heat-treating requirements, it will pay you to take advantage of Loftus' long experience in furnace design and construction. Many of the world's leading companies have—and to their utmost satisfaction, as proved by the high percentage of repeat orders we get.

We'll be glad to send you full details and we will welcome an opportunity to quote on your requirements.

Designers and builders of industrial furnaces **LOFTUS** *Engineering Corporation*

56-23-3—B

1 Gateway Center, Pittsburgh, Pa.
140 S. Dearborn St., Chicago, Ill.



. . . insist on *Carpenter* Stainless Tubing

Severe corrosion problems were encountered in handling hot flue gas and boiling lithium bromide solution in this generator for a gas-fired year-round air conditioner. The tubes transfer heat from the flue gas to boil a solution of 50% lithium bromide and water surrounding the tubes.

A change to Carpenter Stainless Tubing ended the corrosion problem. Handling this unusual combination of corrodents is just one more example of how Carpenter quality pays off in improved products and lower costs. There's a Carpenter Distributor as near as your telephone. Call him today.

MEMBER

The Carpenter Steel Company
Alloy Tube Division, Union, N. J.

Export Dept.: The Carpenter Steel Co., Port Washington, N. Y.—"CARSTEELCO"

Carpenter

more than corrosion resistance

Stainless Tubing & Pipe

Limited supplies of heavy plates and structurals restrict distributors' ability to fill inquiries for those items.

The distributors will not take all of the tonnage offered them by the mills for second quarter delivery. Most are exceptionally well stocked with galvanized sheets. Warehouse sales on the Pacific Coast in first quarter topped those in the like 1956 period.

Pig Iron . . .

Pig Iron Prices, Page 162

Demand for merchant foundry iron is spotty. In the Philadelphia area, a pressure pipe producer is operating only three days a week. Though foundry activities are spotty in the Midwest, merchant iron sellers are shipping full furnace production.

The basic iron melt in New England is off more than that in malleable and foundry iron. There are six open-hearths down in the district, while foundry operations, generally, hold to a five-day schedule.

Even with Wickwire Spencer Steel's output cut by a wildcat strike, merchant iron supplies in the Buffalo market are more than adequate to meet demand.

Strike at the plant of the Woodward Iron Co., Woodward, Ala., continues—it started Nov. 1. A strike of 1700 employees of U.S. Steel's Tennessee Coal & Iron Division's ore mines and sintering plant has been settled.

Pig iron output at Granite City Steel's furnaces attained a record for two straight weeks at 2100 tons daily, against rated capacity of 1900 tons.

Structural Shapes . . .

Structural Shape Prices, Page 157

Structurals shapes and plates are two steel products that continue in strong demand, though even here the pressure is somewhat easier. Some of the lighter shapes are reported more freely available. Standard shapes are definitely in better supply, but no easing is noticed in wide flange sections.

The decline in structural demand continues in the East, but the slump is being cushioned by expanding bridge work. As the spring season gets under way, there should be some quickening in other lines of construction.

Actually, the backlog of the structural fabricating industry, estimated at close to 3.5 million tons, would be heavier were it not for the swing to prestressed concrete bridges in an increasing number of states.

At least 50,000 tons of structural steel have been affected so far. In Illinois alone, 6300 prestressed girders are required for 215 bridges, highway spans. More prestressed spans are being specified in New England where bridge inquiry is lagging.

Bethlehem Pacific Coast Steel Corp. is apparently low bidder on 3500 tons of shapes for the Bonneville Power Administration transmission towers and a Washington state bridge.

Ferroalloys . . .

Ferroalloy Prices, Page 164

Electro Metallurgical Co., a division of Union Carbide & Carbon Co., New York, last week reduced prices 9/10-cent a pound on 50 per cent ferrosilicon, and 1 cent a pound on silicomanganese. The reductions apply across the board to all grades, sizes and quantities. They went into effect Mar. 19.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

13,370 tons, girder and beam spans, contract SNI-4 and SNI-5, Tri-State and East-West tollways, 26 structures, to the Bethlehem Steel Co., Bethlehem, Pa.; Illinois State Toll Highway Commission.

8000 tons, 19-story office building, 100 Church St., New York, to the Bethlehem Steel Co., Bethlehem, Pa.

3165 tons, girder spans, contract ST-1, Ashland, South Park and Wood avenues, Tri-State route, Illinois State Toll Highway Commission, to the Allied Structural Steel Co., Chicago.

2200 tons, Manchester viaduct over Missouri Pacific tracks, Kansas City, Mo., to the Kansas City Structural Steel Co., Kansas City, Kans.

1500 tons, including plates, tainter gates and other items, Ice Harbor dam, to the California Steel Products Co., Richmond, Calif.

1225 tons, bridges, nine grade separations, Connecticut turnpike, Old Lyme-East Lyme-Waterford, to the Phoenix Bridge Co., Phoenixville, Pa.; L. G. Defelice & Son Inc., North Haven, Conn., general contractor.

500 tons, structurals and reinforcing, mess hall dormitories, Kirkland AFB, to the Southern Industrial Steel Co., Arlington, Tex. (structurals) and Cobusco, Albuquerque, N. Mex. (reinforcing); Robert E. McKee, Albuquerque, general contractor.

450 tons, structurals and reinforcing, Wilbur L. Cross high school, New Haven, Conn., to the Connecticut Steel Co., New Haven (structurals), and the Fox Steel Co., Orange, Conn. (reinforcing); Fusco-Amatruda Co., New Haven, general contractor.

435 tons, structurals and reinforcing, James B. Hillhouse high school, New Haven, Conn., to the Connecticut Steel Co., New Haven, (structurals), and the Fox Steel Co., Orange, Conn. (reinforcing); Fusco-Amatruda Co., New Haven, general contractor.

180 tons, also 110 tons of reinforcing, Idaho state underpass, to unstated interest; general contract to Pickey & Nelson, Idaho Falls, at $454,706.

170 tons, plant addition, Olympia Brewing Co., Olympia, Wash., to the Isaacson Iron Works, Seattle.

125 tons, Moses Lake, Wash., hospital, to the Gate City Iron Works, Boise, Idaho; James I. Barnes Construction Co., Seattle, general contractor.

100 tons plus, 85-ton gantry crane for Ice Harbor dam, to the American Legurian Co., New York, low at $316,155 to the U.S. Engineer, Walla Walla, Wash.

STRUCTURAL STEEL PENDING

9700 tons, eight New York state bridges; bids opened Mar. 21.

2370 tons, four schedules, tower steel for 287,000-volt transmission line; Bethlehem Pacific Steel Corp., Seattle, apparently low at $716,802 to the Bonneville Power Administration, Portland, Oreg.

1090 tons, steel frame Rocky Reach power house, Bethlehem Pacific Coast Steel Corp., Seattle, apparently low at $251,056 to the Chelan county, PUD, No. 1, Wenatchee, Wash.

400 tons, addition, Good Samaritan Hospital, Lebanon, Pa.; bids asked.

REINFORCING BARS . . .

REINFORCING BARS PLACED

17,500 tons, Ice Harbor dam and power house, Snake river, Washington state, to the Gilmore Steel Co., Portland, Oreg.; general contractor is C. J. Montag & Son, Portland, jointly with four other firms, low at $29,475,395.

890 tons, pier, naval shipyard, Boston, to the Bethlehem Steel Co., Bethlehem, Pa.; J. F. White Contracting Co., Cambridge, Mass., general contractor.

650 tons, garage, United Shoe Machinery Corp., Boston, to Northern Steel Inc., Medford, Mass.; C. J. Maney Co., Boston, general contractor.

500 tons, building, Hampton Training School for Nurses, Hampton, Va., to the Hall-Hodges Co., Norfolk, Va.; Virginia Engineering Co. Inc., Newport News, Va., general contractor.

300 tons, Lincoln Research Laboratory, Cambridge, Mass., to the U.S. Steel Supply Division, U.S. Steel Corp., Boston; Jefferson Construction Co., Cambridge, Mass., general contractor.

250 tons, dormitory, Westover AFB, Chicopee Falls, Mass., to the U.S. Steel Supply Division, U.S. Steel Corp., Boston; Jefferson Construction Co., Cambridge, Mass., general contractor.

210 tons, elementary school, East Boston, Mass., to Northern Steel Inc., Medford, Mass.; Rossano Construction Co., Boston, general contractor.

200 tons, early warning project, Moller, Alaska, to Joseph T. Ryerson & Son Inc., Seattle; S. S. Mullen Inc., Seattle, general contractor.

150 tons, Navy installation, Pacific Beach, Wash., to Joseph T. Ryerson & Son Inc., Seattle; Kuney-Johnson Co., Seattle, general contractor.

111 tons, early warning project, Port Heiden, Alaska, to the Bethlehem Pacific Coast Steel Corp., Seattle; Chris. Berg Inc., Seattle, general contractor.

REINFORCING BARS PENDING

3385 tons, highway structures, Cook county, Illinois State Toll Highway Commission; bids Apr. 4, three contracts T-1B, T-2A and T-5.

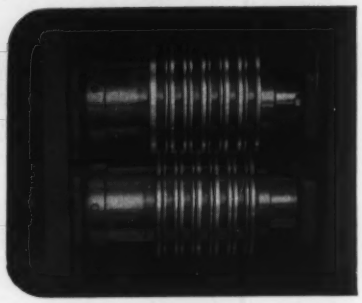
1665 tons, bridge structure, Tri-State route, Northern Illinois toll highway contract T-4A, Lyons township, Cook county, Ill., for the Illinois State Toll Highway Commission, Chicago; bids Apr. 11.

1500 tons, 5.4 miles of Northern Illinois toll highway contract T-5A, including erection of precast concrete bridges, Lyons and Proviso townships, Cook county, Ill., for Illinois State Toll Highway Commission, Chicago, bids Apr. 4.

CUT COSTS 3 WAYS!

WITH

COWLES
SLITTING KNIVES



Cowles knives are so accurate they can be assembled on an arbor quickly with little or no shimming, reducing set-up time. They stay on the job longer, require very infrequent interruption for re-grinding;— and — produce straight edged strip with minimum burr, preventing tie-ups in later forming operations.

For maximum satisfaction, specify Cowles, world's largest manufacturer of rotary slitting knives. Furnished in any face, diameter and bore, in our **Max-Cut; Special Alloy; Super Alloy; Circle C; Super C;** or any special analysis for slitting high and low carbon steels, stainless, silicon or non-ferrous metals. Prompt delivery!

Engineering Assistance On Any Slitting Job.

COWLES TOOL COMPANY

2050 WEST 110th STREET • CLEVELAND 2, OHIO

Specializing in the Manufacture of

ROTARY SLITTING KNIVES • SPACING COLLARS • ROTARY TRIMMING KNIVES • ROLL TURNING TOOLS • EDGING ROLLS • CUT-OFF KNIVES STANDARD AND SPECIALLY ENGINEERED TOOLS FOR ALL FERROUS AND NON-FERROUS PROCESSING, TRIMMING AND FORMING REQUIREMENTS.

AQ*——CUTS SHORT RUN STAMPING COSTS——

PROBLEM:

Relay Support Bracket with
9 holes—two different sizes
Tolerance—hole dia. + .002/— .001; location ± .003
Blank size (developed)—1¼" x 3"
Material—.062 C. R. Strip Steel

RELAY BRACKET HOLE PUNCHING ANALYSIS

CONVENTIONAL	Single Hole "Short Run" jig punching Tools and first 1,000 pieces Subsequent re-runs 1,000 pieces	$125.00 $102.00
CONVENTIONAL	"Permanent Gang Die" Punching Tools and first 1,000 pieces Subsequent re-runs 1,000 pieces	$266.00 $11.00
FEDERAL	"Multiple Hole Process" Punching Tools and first 1,000 pieces Subsequent re-runs 1,000 pieces	$70.00 $41.00

In analyzing the problem it was found that only through Federal's multiple hole-punching process could stamping costs be cut and still hold to rigid tolerances. Let Federal quote on your next *problem piece* and save!

*Analyzed Quotation

Federal TOOL & MFG. CO.

Quality Stampings in Small Quantities

3611 Alabama Ave., Minneapolis, Minnesota

1150 tons, 2.59 miles of tri-state route, Northern Illinois toll highway contract 7-2A, including erection of precast concrete bridges, Bremen and Worth townships, Cook county, Ill., for Illinois State Toll Highway Commission, Chicago, bids Apr. 4.

737 tons, construction of bridge T1-9, tri-state route, Northern Illinois toll highway contract T-1B, Thronton township, Cook county, Ill., for Illinois State Toll Highway Commission, Chicago, bids Apr. 4.

700 tons, municipal parking garage, Fort Hill Square, Boston.

600 tons, office building, Howard Realty Co., Providence, R. I.; George A. Fuller Co., Boston, general contractor.

400 tons, Washington state project, four highway bridges, Spokane county; D. M. Drake Co., Portland, Oreg., award at $945,228.

380 tons, two Washington state highway projects, Thurston county; Scarcella Bros., Seattle, and Troy T. Burnham, Seattle, awarded at $339,321 and $291,427.

220 tons, Washington state, two box girder spans, Whatcom county; general contract to E. Selene & Sons, Bellingham, Wash., low at $210,228.

210 tons, Washington state, four highway bridges, Clark county; general contract to the Hannan Bros. Co., Portland, Oreg., low at $227,521.

200 tons, early warning project, Nikolski, Alaska, to Baker & Ford Co., Bellingham, Wash., low at $4,643,647, to the U.S. Engineer.

200 tons, early warning project, Driftwood Bay, Alaska, to the S. Patti Construction Co., Kansas City, Mo., and other joint bidders, at $4,915,052.

135 tons, two Washington state highway bridges, Thurston county; bids to Olympia, Wash., Mar. 26.

187 tons, 3.67 miles of Northern Illinois toll highway, contract E-1A, including erection of precast concrete bridges, Grove and Aurora townships, Kane county, Ill., for the Illinois State Toll Highway Commission, Chicago; bids Apr. 11.

35 tons, also unstated precast items and 30 tons of shapes, Washington state bridge approach, Pierce county; general contract to General Construction Co., Seattle, low at $822,195.

65 tons, and other steel items, concrete covered water reservoir; bids to E. H. T. McGowan, city clerk, Bremerton, Wash., Apr. 3.

PLATES . . .

PLATES PENDING

200 tons, 500 000-gal elevated water tank, Naval station, New Orleans (Algiers); bids Mar. 26, Eighth Naval District, New Orleans.

Unstated, 9000 ft, penstocks, Green Spring power plant, Rogue river, Oregon; bids to the Bureau of Reclamation, Medford, Oreg., April-May.

PIPE . . .

CAST IRON PIPE PLACED

180 tons, 6 to 16 in., for Port Angeles, Wash., to the Pacific States Cast Iron Pipe Co., Seattle.

100 tons, system expansion, Ellensburg, Wash., to the Pacific States Cast Iron Pipe Co., Seattle.

CAST IRON PIPE PENDING

700 tons, 6 to 20 in., also accessories; contractors' bids in at Seattle.

162 tons, bids in at Wenatchee, Wash.

100 tons, bids in at Centralia and Auburn, Wash.

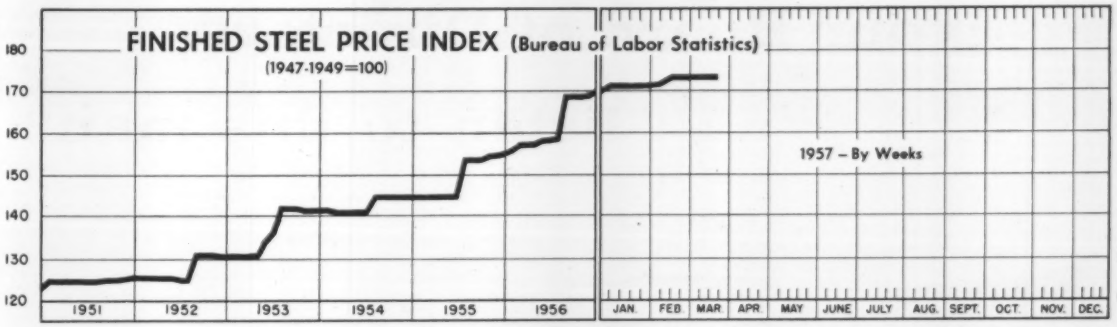
STEEL PIPE PLACED

500 tons, fabricated pipe for a municipal project at Jamaica Bay, Brooklyn, through Spearin, Preston & Burrows, general contractor, to Alco Products Inc., New York.

STEEL PIPE PENDING

3000 tons, 42-in. pipe, Sturgeon Point project, Erie County Water Authority, Erie county, New York, plans revised with reinforced concrete to be used instead of fabricated steel.

Price Indexes and Composites



Mar. 19, 1957	Week Ago	Month Ago	Mar. Avg.	Year Ago
174.0	173.9	173.8	173.9	157.1

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Mar. 19

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard, No. 1	$5.350	Bars, Reinforcing	5.788
Rails, Light, 40 lb	6.817	Bars, C.F., Carbon	9.910
Tie Plates	6.275	Bars, C.F., Alloy	13.450
Axles, Railway	9.400	Bars, C.F., Stainless, 302 (lb)	0.533
Wheels, Freight Car, 33 in. (per wheel)	57.50	Sheets, H.R., Carbon	5.945
Plates, Carbon	5.900	Sheets, C.R., Carbon	6.789
Structural Shapes	5.667	Sheets, Galvanized	8.220
Bars, Tool Steel, Carbon (lb)	0.480	Sheets, C.R., Stainless, 302 (lb)	0.660
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.585	Sheets, Electrical	11.225
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.274	Strip, C.R., Carbon	8.843
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.769	Strip, C.R., Stainless, 430 (lb)	0.475
Bars, H.R., Alloy	10.150	Strip, H.R., Carbon	6.000
Bars, H.R., Stainless, 303 (lb)	0.508	Pipe, Black, Buttweld (100 ft)	18.894
Bars, H.R., Carbon	6.075	Pipe, Galv, Buttweld (100 ft)	23.034
		Pipe, Line (100 ft)	190.108
		Casing, Oil Well, Carbon (100 ft)	185.566
		Casing, Oil Well, Alloy (100 ft)	288.980
		Tubes, Boiler (100 ft)	46.737
		Tubing, Mechanical, Carbon (100 ft)	23.713
		Tubing, Mechanical, Stainless, 304 (100 ft)	197.663
		Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	9.433
		Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.133
		Black Plate, Canmaking Quality (95 lb base box)	7.233
		Wire, Drawn, Carbon	9.775
		Wire, Drawn, Stainless, 430 (lb)	0.630
		Bale Ties (bundle)	7.213
		Nails, Wire, 8d Common	9.365
		Wire, Barbed (80-rod spool)	8.412
		Woven Wire Fence (20-rod roll)	20.505

STEEL's FINISHED STEEL PRICE INDEX*

	Mar. 20 1957	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	227.41	227.41	227.10	209.10	171.92
Index in cents per lb	6.161	6.161	6.152	5.665	4.657

STEEL's ARITHMETICAL PRICE COMPOSITES

Finished Steel NT*	$139.51	$139.51	$139.60	$128.02	$106.32
No. 2 Fdry Pig Iron, GT	64.56†	64.56†	62.63	58.99	52.54
Basic Pig Iron, GT	64.11†	64.11†	62.18	58.49	52.16
Malleable Pig Iron, GT	65.63†	65.63†	63.41	59.77	53.27
Steelmaking Scrap, GT	48.83	50.33	52.83	49.83	43.00

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130. †Revised.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL

	Mar. 20 1957	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	5.075	5.075	5.075	4.65	3.70
Bars, H.R., Chicago	5.075	5.075	5.075	4.65	3.70
Bars, H.R.,deld.,Philadelphia	5.365	5.365	5.365	4.93	4.223
Bars, C.F., Pittsburgh	6.85*	6.85*	6.85*	6.25*	4.55
Shapes, Std., Pittsburgh	5.00	5.00	5.00	4.60	3.65
Shapes, Std., Chicago	5.00	5.00	5.00	4.60	3.65
Shapes, deld., Philadelphia	5.31	5.31	5.31	5.00	3.918
Plates, Pittsburgh	4.85	4.85	4.85	4.50	3.70
Plates, Chicago	4.85	4.85	4.85	4.50	3.70
Plates, Coatesville, Pa.	5.25	5.25	5.25	4.80	4.15
Plates, Sparrows Point, Md.	4.85	4.85	4.85	4.50	3.70
Plates, Claymont, Del.	5.70	5.70	5.70	4.80	4.15
Sheets, H.R., Pittsburgh	4.675	4.675	4.675	4.325	3.60-3.75
Sheets, H.R., Chicago	4.675	4.675	4.675	4.325	3.60
Sheets, C.R., Pittsburgh	5.75	5.75	5.75	5.325	4.35
Sheets, C.R., Chicago	5.75	5.75	5.75	5.325	4.35
Sheets, C.R., Detroit	5.75-5.85	5.75-5.85	5.75-5.85	5.325-5.425	4.55
Sheets, Galv., Pittsburgh	6.30	6.30	6.30	5.85	4.80
Strip, H.R., Pittsburgh	4.675	4.675	4.675	4.325	3.75-4.00
Strip, H.R., Chicago	4.675	4.675	4.675	4.325	3.50
Strip, C.R., Pittsburgh	6.85	6.85	6.85	6.25	4.65-5.35
Strip, C.R., Chicago	6.85	6.85	6.85	6.25-6.35	4.90
Strip, C.R., Detroit	6.95	6.95	6.95	6.35	4.85-5.60
Wire, Basic, Pittsburgh	7.20	7.20	7.20	6.60	4.85-5.10
Nails, Wire Pittsburgh	8.49	8.49	8.49	7.60	5.90-6.20
Tin plate (1.50 lb), box, Pitts.	$9.95	$9.95	$9.95	$9.45	$8.70

*Including 0.35c for special quality

SEMIFINISHED STEEL

Billets, forging, Pitts. (NT)	$91.50	$91.50	$91.50	$84.50	$66.00
Wire rods, 7/32-5/8" Pitts.	5.80	5.80	5.80	5.375	4.10-4.30

PIG IRON, Gross Ton

	Mar. 20 1957	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bessemer, Pitts.	$65.50	$65.50	$63.50	$59.50	$53.00
Basic, Valley	64.50	64.50	62.50	58.50	52.00
Basic, deld., Phila.	68.38	66.26	66.26	62.12	56.61
No. 2 Fdry, NevilleIsland,Pa.	65.00	65.00	63.00	59.00	52.50
No. 2 Fdry, Chicago	65.00	65.00	63.00	59.00	52.50
No. 2 Fdry, deld., Phila.	68.88	66.76	66.76	62.66	57.11
No. 2 Fdry, Birm.	59.00	59.00	59.00	55.00	48.88
No. 2 Fdry(Birm.)deld. Cin.	66.70	66.70	66.70	62.70	55.49
Malleable, Valley	65.00	65.00	63.00	59.00	52.50
Malleable, Chicago	65.00	65.00	63.00	59.00	52.50
Ferromanganese, Duquesne	255.00†	255.00†	255.00†	205.00†	188.00*

†74-76% Mn, net ton. *75-82% Mn, gross ton, Etna, Pa.

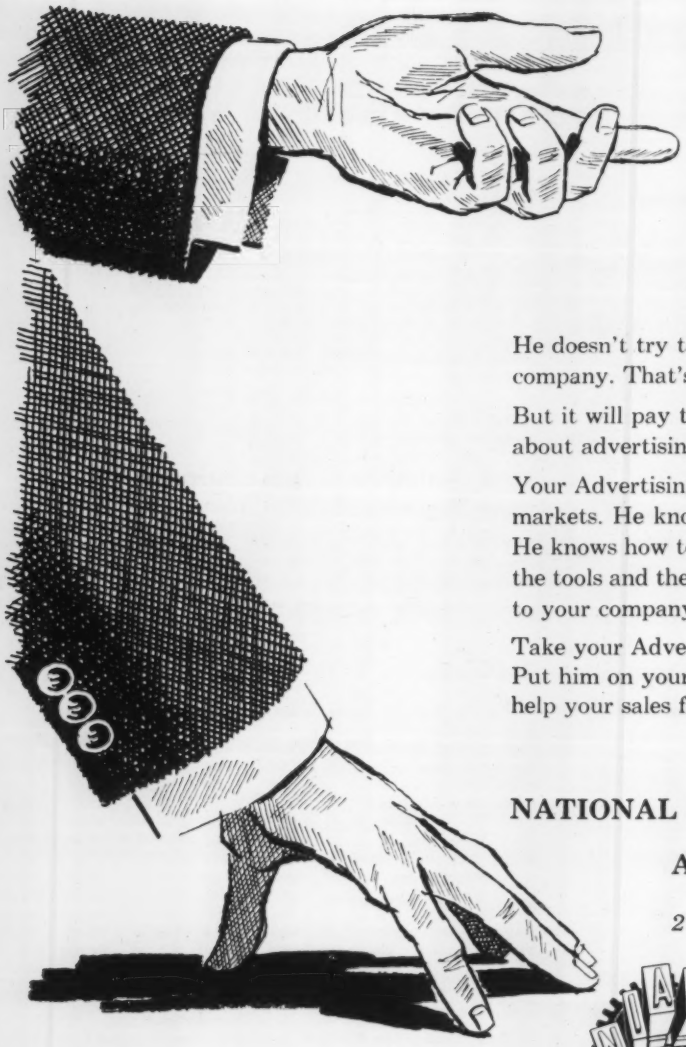
SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pittsburgh	$48.50	$50.50	$53.50	$49.00	$44.00
No. 1 Heavy Melt, E. Pa.	53.00	54.00	57.00	51.00	42.50
No. 1 Heavy Melt, Chicago	45.00	46.50	48.00	49.50	42.50
No. 1 Heavy Melt, Valley	46.50	48.50	53.50	55.50	44.00
No. 1 Heavy Melt, Cleve.	43.50	45.50	51.50	52.50	43.00
No. 1 Heavy Melt, Buffalo	48.50	48.50	53.50	47.50	43.00
Rails, Rerolling, Chicago	59.50	59.50	64.50	66.50	52.50
No. 1 Cast, Chicago	42.50	42.50	45.50	48.50	49.00

COKE, Net Ton

Beehive, Furn, Connlsvl.	$15.25	$15.25	$15.25	$14.125	$14.75
Beehive, Fdry, Connlsvl.	18.00	18.00	18.00	16.50	17.50

Does your Board of Directors listen to this man?



He doesn't try to tell your Directors how to run the company. That's their job, and he respects it.

But it will pay them to listen to him when he talks about advertising for your company. That's his job!

Your Advertising Manager is a man who knows markets. He knows the science of "mechanized selling." He knows how to help turn sales goals into sales. He has the tools and the know-how to make major contributions to your company's progress and profit.

Take your Advertising Manager into your confidence. Put him on your first team. Let him manage. He can help your sales force sell more economically.

NATIONAL INDUSTRIAL ADVERTISERS ASSOCIATION, INC.

271 Madison Avenue, New York 16, N. Y.

An organization of over 4000 members engaged in the advertising and marketing of industrial products, with local chapters in ALBANY, BALTIMORE, BOSTON, BUFFALO, CHICAGO, CLEVELAND, COLUMBUS, DALLAS-FORT WORTH, DENVER, DETROIT, HAMILTON, ONT., HARTFORD, HOUSTON, INDIANAPOLIS, LOS ANGELES, MILWAUKEE, MINNEAPOLIS-ST. PAUL, MONTREAL, QUE., NEWARK, NEW YORK, PHILADELPHIA, PITTSBURGH, PORTLAND, ROCHESTER, ROCKFORD, ST. LOUIS, SAN FRANCISCO, TORONTO, ONT., YOUNGSTOWN.

Steel Prices

Mill prices as reported to STEEL, Mar. 20, cents per pound except as otherwise noted. *Changes shown in italics.* Code numbers following mill points indicate producing company. Key to producers, page 158; to footnotes, page 160.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)

Munhall,Pa. U5 .....$70.50

INGOTS, Alloy (NT)

Detroit R7 .....$74.00
Houston S5 .....74.00
Midland,Pa. C18 .....74.00
Munhall,Pa. U5 .....74.00

BILLETS, BLOOMS & SLABS Carbon, Rerolling (NT)

Bessemer,Pa. U5 .....$74.00
Bridgeport,Conn. N19 ..79.00
Buffalo R2 .....74.00
Clairton,Pa. U5 .....74.00
Ensley,Ala. T2 .....74.00
Fairfield,Ala. T2 .....74.00
Fontana,Calif. K1 .....83.50
Gary,Ind. U5 .....74.00
Johnstown,Pa. B2 .....74.00
Lackawanna,N.Y. B2 ..74.00
LoneStar,Tex. L6 .....80.00
Munhall,Pa. U5 .....74.00
S.Chicago,Ill. R2, U5...74.00
S.Duquesne,Pa. U5 ....74.00
Sterling,Ill. N15 .....74.00
Youngstown R2 .....74.00

Carbon, Forging (NT)

Bessemer,Pa. U5 .....$91.50
Bridgeport,Conn. N19 ..96.50
Buffalo R2 .....91.50
Canton,O. R2 .....94.00
Clairton,Pa. U5 .....91.50
Conshohocken,Pa. A3 ..96.50
Ensley,Ala. T2 .....91.50
Fairfield,Ala. T2 .....91.50
Fontana,Calif. K1 ....101.00
Gary,Ind. U5 .....91.50
Geneva,Utah C11 .....91.50
Houston S5 .....96.50
Johnstown,Pa. B2 .....91.50
Lackawanna,N.Y. B2 ..91.50
LosAngeles B3 .....101.00
Midland,Pa. C18 .....91.50
Munhall,Pa. U5 .....91.50
Seattle B3 .....105.00
S.Chicago R2, U5, W14 91.50
S.Duquesne,Pa. U5 ....91.50
S.SanFrancisco B3 ...101.00

Alloy, Forging (NT)

Bethlehem,Pa. B2 ...$107.00
Bridgeport,Conn. N19..107.00
Buffalo R2 .....107.00
Canton,O. R2 .....107.00
Conshohocken,Pa. A3..114.00
Detroit R7 .....107.00
Fontana,Calif. K1 ....128.00
Gary,Ind. U5 .....107.00
Houston S5 .....112.00
Ind.Harbor,Ind. Y1 ..107.00
Johnstown,Pa. B2 ....107.00
Lackawanna,N.Y. B2..107.00
LosAngeles B3 .....127.00
Massillon,O. R2 .....107.00
Midland,Pa. C18 .....107.00
Munhall,Pa. U5 .....107.00
S.Chicago R2,U5,W14 ..107.00
S.Duquesne,Pa. U5 ....107.00
Struthers,O. Y1 .....107.00
Warren,O. C17 .....107.00

ROUNDS, SEAMLESS TUBE (NT)

Bridgeport,Conn. N19 $116.50
Buffalo R2 .....111.50
Canton,O. R2 .....114.00
Cleveland,O. R2 .....111.50
Gary,Ind. U5 .....111.50
S.Chicago,Ill. R2, W14..111.50
S.Duquesne,Pa. U5 ....111.50

SKELP

Aliquippa,Pa. J5 .....4.725
LoneStar,Tex. L6 .....5.025
Munhall,Pa. U5 .....4.625
Warren,O. R2 .....4.625
Youngstown R2, U5 ...4.625

WIRE RODS

AlabamaCity,Ala. R2 ...5.80
Aliquippa,Pa. J5 .....5.80
Alton,Ill. L1 .....6.00
Buffalo W12 .....5.80
Cleveland A7 .....5.80
Donora,Pa. A7 .....5.80
Fairfield,Ala. T2 .....5.80
Houston S5 .....6.05
IndianaHarbor,Ind. Y1..5.80
Johnstown,Pa. B2 .....5.80
Joliet,Ill. A7 .....5.80
KansasCity,Mo. S5 .....6.05
Kokomo,Ind. C16 .....5.90
LosAngeles B3 .....6.60
Minnequa,Colo. C10 ....6.05
Monessen,Pa. P17 .....5.80
N.Tonawanda,N.Y. B11 .5.80
Pittsburg,Calif. C11 ....6.60
Portsmouth,O. P12 .....5.80
Roebling,N.J. R5 .....5.90
S.Chicago,Ill. R2 .....5.80
SparrowsPoint,Md. B2 ..5.90
Sterling,Ill.(1) N15 ....5.80
Sterling,Ill. N15 .....5.90
Struthers,O. Y1 .....5.80
Worcester,Mass. A7 ....6.10

STRUCTURALS

Carbon Steel Std. Shapes

Ala.City,Ala. R2 .....5.00
Aliquippa,Pa. J5 .....5.00
Bessemer,Ala. T2 .....5.00
Bethlehem,Pa. B2 .....5.05
Birmingham C15 .....5.25
Clairton,Pa. U5 .....5.00
Fairfield,Ala. T2 .....5.00
Fontana,Calif. K1 .....5.75
Gary,Ind. U5 .....5.00
Geneva,Utah C11 .....5.00
Houston S5 .....5.10
Ind.Harbor,Ind. I-2 ....5.00
Johnstown,Pa. B2 .....5.05
Joliet,Ill. P22 .....5.00
KansasCity,Mo. S5 .....5.10
Lackawanna,N.Y. B2 ...5.05
LosAngeles B3 .....5.70
Minnequa,Colo. C10 ....5.30
Munhall,Pa. U5 .....5.00
Niles,Calif. P1 .....5.75
Phoenixville,Pa. P4 ....5.85
Portland,Oreg. O4 .....5.80
Seattle B3 .....5.75
S.Chicago,Ill. U5, W14..5.00
S.SanFrancisco B3 ....5.65
Sterling,Ill. N15 .....5.00
Torrance,Calif. C11 ....5.70
Weirton,W.Va. W6 .....5.00

Wide Flange

Bethlehem,Pa. B2 .....5.05
Clairton,Pa. U5 .....5.00
Fontana,Calif. K1 .....5.90
IndianaHarbor,Ind. I-2..5.25
Lackawanna,N.Y. B2 ...5.05
Munhall,Pa. U5 .....5.00
Phoenixville,Pa. P4 ....5.85
S.Chicago,Ill. U5 .....5.00

Alloy Std. Shapes

Aliquippa,Pa. J5 .....6.20
Clairton,Pa. U5 .....6.20
Gary,Ind. U5 .....6.20
Houston S5 .....6.30
Munhall,Pa. U5 .....6.20
S.Chicago,Ill. U5 .....6.20

H.S., L.A. Std. Shapes

Aliquippa,Pa. J5 .....7.35
Bessemer,Ala. T2 .....7.35
Bethlehem,Pa. B2 .....7.40
Clairton,Pa. U5 .....7.35
Fairfield,Ala. T2 .....7.35
Fontana,Calif. K1 .....8.10
Gary,Ind. U5 .....7.35
Geneva,Utah C11 .....7.35
Houston S5 .....7.45
Ind.Harbor,Ind. I-2, Y1..7.35
Johnstown,Pa. B2 .....7.40
KansasCity,Mo. S5 .....7.45
Lackawanna,N.Y. B2 ...7.40
LosAngeles B3 .....8.05
Munhall,Pa. U5 .....7.35
Seattle B3 .....8.10
S.Chicago,Ill. U5, W14..7.35
S.SanFrancisco B3 ....8.00
Struthers,O. Y1 .....7.35

H.S., L.A. Wide Flange

Bethlehem,Pa. B2 .....7.40
Lackawanna,N.Y. B2 ...7.40
Munhall,Pa. U5 .....7.35
S.Chicago,Ill. U5 .....7.35

PILING

BEARING PILES

Bethlehem,Pa. B2 .....5.05
Lackawanna,N.Y. B2 ...5.05
Munhall,Pa. U5 .....5.00
S.Chicago,Ill. U5 .....5.00

STEEL SHEET PILING

Lackawanna,N.Y. B2 ...5.90
Munhall,Pa. U5 .....5.90
S.Chicago,Ill. U5 .....5.90

PLATES

PLATES, Carbon Steel

Ala.City,Ala. R2 .....4.85
Aliquippa,Pa. J5 .....4.85
Ashland,Ky.(15) A10 ...4.85
Bessemer,Ala. T2 .....4.85
Clairton,Pa. U5 .....4.85
Claymont,Del. C22 .....5.70
Cleveland J5, R2 .....4.95
Coatesville,Pa. L7 .....5.25
Conshohocken,Pa. A3 ...4.95
Detroit M1 .....4.95
Ecorse,Mich. G5 .....4.95
Fairfield,Ala. T2 .....4.85
Fontana,Calif.(30) K1 ..5.60
Gary,Ind. U5 .....4.85
Geneva,Utah C11 .....4.85
GraniteCity,Ill. G4 .....5.05
Harrisburg,Pa. P4 .....5.80
Houston S5 .....4.95
Ind.Harbor,Ind. I-2, Y1.4.85
Johnstown,Pa. B2 .....4.85
Lackawanna,N.Y. B2 ...4.85
LoneStar,Tex. L6 .....5.20
Minnequa,Colo. C10 ....5.70
Munhall,Pa. U5 .....4.85
Newport,Ky. A2 .....4.85
Pittsburgh J5 .....4.85
Riverdale,Ill. A1 .....4.85
Seattle B3 .....5.75
Sharon,Pa. S3 .....4.85
S.Chicago,Ill. U5, W14..4.85
SparrowsPoint,Md. B2 ..4.85
Steubenville,O. W10 ....4.85
Warren,O. R2 .....4.85
Youngstown R2, U5, Y1.4.85

PLATES, Carbon Abras. Resist.

Claymont,Del. C22 .....6.20
Fontana,Calif. K1 .....6.75
Geneva,Utah C11 .....6.25
Johnstown,Pa. B2 .....5.65
SparrowsPoint,Md. B2...5.65

PLATES, Wrought Iron

Economy,Pa. B14 .....11.95

PLATES, H.S., L.A.

Aliquippa,Pa. J5 .....7.25
Bessemer,Ala. T2 .....7.25
Clairton,Pa. U5 .....7.25
Claymont,Del. C22 .....7.55
Cleveland J5, R2 .....7.25
Coatesville,Pa. L7 .....7.55
Conshohocken,Pa. A3 ...7.25
Ecorse,Mich. G5 .....7.35
Fairfield,Ala. T2 .....7.25
Fontana,Calif.(30) K1 ..8.00
Gary,Ind. U5 .....7.25
Geneva,Utah C11 .....7.25
Houston S5 .....7.35
Ind.Harbor,Ind. I-2, Y1..7.25
Johnstown,Pa. B2 .....7.25
Munhall,Pa. U5 .....7.25
Pittsburgh J5 .....7.25
Seattle B3 .....8.15
Sharon,Pa. S3 .....7.25
S.Chicago,Ill. U5, W14 ..7.25
SparrowsPoint,Md. B2 ..7.25
Warren,O. R2 .....7.25
Youngstown U5, Y1 ....7.25

PLATES, Alloy

Aliquippa,Pa. J5 .....6.85
Claymont,Del. C22 .....6.85
Coatesville,Pa. L7 .....6.85
Fontana,Calif.(30) K1 ..7.60
Gary,Ind. U5 .....6.85
Houston S5 .....6.95
Ind.Harbor,Ind. Y1 ....6.85
Johnstown,Pa. B2 .....6.85
Munhall,Pa. U5 .....6.85
Newport,Ky. A2 .....6.85
Pittsburgh J5 .....6.85
Seattle B3 .....7.75
Sharon,Pa. S3 .....6.85
S.Chicago,Ill. U5, W14..6.85
SparrowsPoint,Md. B2 ..6.85
Youngstown Y1 .....6.85

FLOOR PLATES

Cleveland J5 .....5.925
Conshohocken,Pa. A3 ..5.925
Harrisburg,Pa. P4 ....6.275
Ind.Harbor,Ind. I-2 ...5.925
Munhall,Pa. U5 .....5.925
S.Chicago,Ill. U5 .....5.925

PLATES, Ingot Iron

Ashland c.l. (15) A10...5.10
Ashland l.c.l. (15) A10..5.60
Cleveland c.l. R2 .....5.60
Warren,O. c.l. R2 .....5.60

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)

Ala.City,Ala.(9) R2 ...5.075
Aliquippa,Pa.(9) J5 ...5.075
Alton,Ill. L1 .....5.275
Atlanta(9) A11 .....5.575
Bessemer,Ala.(9) T2 ...5.075
Birmingham(9) C15 ...5.325
Bridgeport,Conn. N19 ..5.30
Buffalo(9) R2 .....5.075
Clairton,Pa.(9) U5 ....5.075
Cleveland(9) R2 .....5.075
Ecorse,Mich.(9) G5 ....5.175
Emeryville,Calif. J7 ....5.85
Fairfield,Ala.(9) T2 ...5.075
Fairless,Pa.(9) U5 ....5.225
Fontana,Calif.(9) K1 ..5.775
Gary,Ind.(9) U5 .....5.075
Houston(9) S5 .....5.325
Ind.Harbor(9) I-2, Y1..5.075
Johnstown,Pa.(9) B2...5.075
Joliet,Ill. P22 .....5.075
KansasCity,Mo.(9) S5..5.325
Lackawanna(9) B2 ....5.075
LosAngeles(9) B3 .....5.775
Milton,Pa. M18 .....5.225
Minnequa,Colo. C10 ....5.525
Niles,Calif. P1 .....5.85
N.T'wanda,N.Y.(9)B11 5.425
Pittsburg,Calif.(9) C11..5.775
Pittsburgh(9) J5 .....5.075
Portland,Oreg. O4 .....5.85
Seattle B3, N14 .....5.825
S.Ch'c'go(9)R2,U5,W14 5.075
S.Duquesne,Pa.(9) U5..5.075
S.SanFran.,Calif.(9) B3 5.825
Sterling,Ill.(1) N15 ....5.075
Sterling,Ill. N15 .....5.175
Struthers,O. Y1 .....5.075
Torrance,Calif.(9) C11..5.775
Youngstown(9) R2, U5..5.075

BARS, H.R. Leaded Alloy (Including leaded extra)

Warren,O. C17 .....7.125

BARS, Hot-Rolled Alloy

Aliquippa,Pa. J5 .....6.125
Bethlehem,Pa. B2 .....6.125
Bridgeport,Conn. N19 ...6.20
Buffalo R2 .....6.125
Canton,O. R2 .....6.125
Clairton,Pa. U5 .....6.125
Detroit R7 .....6.125
Ecorse,Mich. G5 .....6.225
Fairless,Pa. U5 .....6.275
Fontana,Calif. K1 .....7.175
Gary,Ind. U5 .....6.125
Houston S5 .....6.375
Ind.Harbor,Ind. I-2, Y1..6.125
Johnstown,Pa. B2 .....6.125
KansasCity,Mo. S5 .....6.375
Lackawanna,N.Y. B2 ...6.125
LosAngeles B3 .....7.175
Massillon,O. R2 .....6.125
Midland,Pa. C18 .....6.125
Pittsburgh J5 .....6.125
S.Chicago R2,U5,W14 ...6.125
S.Duquesne,Pa. U5 ....6.125
Struthers,O. Y1 .....6.125
Warren,O. C17 .....6.125
Youngstown U5 .....6.125

BARS & SMALL SHAPES, H.R. High-Strength Low-Alloy

Aliquippa,Pa. J5 .....7.425
Bessemer,Ala. T2 .....7.425
Bethlehem,Pa. B2 .....7.425
Bridgeport,Conn. N19 ..7.50
Clairton,Pa. U5 .....7.425
Cleveland R2 .....7.425
Ecorse,Mich. G5 .....7.525
Fairfield,Ala. T2 .....7.425
Fontana,Calif. K1 .....8.125
Gary,Ind. U5 .....7.425
Houston S5 .....7.675
Ind.Harbor,Ind. Y1 ....7.425
Johnstown,Pa. B2 .....7.425
KansasCity,Mo. S5 .....7.675
Lackawanna,N.Y. B2 ..7.425
LosAngeles B3 .....8.125
Pittsburgh J5 .....7.425
Seattle B3 .....8.175
S.Chicago,Ill. U5, W14..7.425
S.Duquesne,Pa. U5 ....7.425
S.SanFrancisco B3 ....8.175
Struthers,O. Y1 .....7.425
Youngstown U5 .....7.425

BAR SIZE ANGLES; H.R. Carbon

Bethlehem,Pa.(9) B2...5.225
Houston(9) S5 .....5.325
KansasCity,Mo.(9) S5..5.325
Lackawanna(9) B2 ....5.075
Sterling,Ill. N15 .....5.175
Sterling,Ill.(1) N15 ....5.075

BAR SIZE ANGLES; S. Shapes

Aliquippa,Pa. J5 .....5.075
Atlanta A11 .....5.575
Joliet,Ill. P22 .....5.075
Niles,Calif. P1 .....5.85
Pittsburgh J5 .....5.075
Portland,Oreg. O4 .....5.85
SanFrancisco S7 .....5.95

BAR SHAPES, Hot-Rolled Alloy

Aliquippa,Pa. J5 .....6.20
Clairton,Pa. U5 .....6.20
Gary,Ind. U5 .....6.20
Houston S5 .....6.45
KansasCity,Mo. S5 .....6.45
Pittsburgh J5 .....6.20
Youngstown U5 .....6.20

BARS, C.F., Leaded Alloy (Including leaded extra)

Ambridge,Pa. W18 ....9.475
BeaverFalls,Pa. M12 ..9.475
Chicago W18 .....9.475
Cleveland C20 .....9.475
LosAngeles S30 .....11.10
LosAngeles P2 .....11.35
Monaca,Pa. S17 .....9.475
Newark,N.J. W18 .....9.65
Warren,O. C17 .....9.475

BARS, Cold-Finished Carbon

Ambridge,Pa. W18 .....6.85
BeaverFalls,Pa. M12,R2.6.85
Birmingham C15 .....7.45
Bridgeport,Conn. N19 ...7.20
Buffalo B5 .....6.90
Camden,N.J. P13 .....7.30
Carnegie,Pa. C12 .....6.85
Chicago W18 .....6.85
Cleveland A7, C20 ....6.85
Detroit B5, P17 .....7.05
Detroit R7 .....6.85
Donora,Pa. A7 .....6.85
Elyria,O. W8 .....6.85
FranklinPark,Ill. N5 ....6.85
Gary,Ind. U5 .....6.85
GreenBay,Wis. F7 .....6.85
Hammond,Ind. L2, M13.6.85
Hartford,Conn. R2 ....7.35
Harvey,Ill. B5 .....6.85
LosAngeles(49) S30 ....8.30
LosAngeles R2 .....8.75
LosAngeles P2 .....8.30
Mansfield,Mass. B5 ....7.40
Massillon,O. R2, R8 ....6.85
Midland,Pa. C18 .....6.85
Monaca,Pa. S17 .....6.85
Newark,N.J. W18 .....7.30
NewCastle,Pa.(17) B4 ..6.85
Pittsburgh J5 .....6.85
Plymouth,Mich. P5 .....7.10
Putnam,Conn. W18 .....7.40
Readville,Mass. C14 ....7.40
S.Chicago,Ill. W14 .....6.85
SpringCity,Pa. K3 .....7.30
Struthers,O. Y1 .....6.85
Waukegan,Ill. A7 .....6.85
Youngstown F3, Y1 ....6.85

BARS, Cold-Finished Carbon (Turned and Ground)

Cumberland,Md.(5) C19.6.10

BARS, Cold-Finished Alloy

Ambridge,Pa. W18 ....8.325
BeaverFalls,Pa. M12,R2 8.325
Bethlehem,Pa. B2 .....8.325
Bridgeport,Conn. N19 ..8.475
Buffalo B5 .....8.325
Camden,N.J. P13 .....8.50
Canton,O. T7 .....8.325
Carnegie,Pa. C12 .....8.325
Chicago W18 .....8.325
Cleveland A7, C20 ....8.325
Detroit B5, P17 .....8.525
Detroit R7 .....8.325
Donora,Pa. A7 .....8.325
Elyria,O. W8 .....8.325
FranklinPark,Ill. N5 ..8.325
Gary,Ind. R2 .....8.325
GreenBay,Wis. F7 .....8.325
Hammond,Ind. L2, M13 8.325
Hartford,Conn. R2 ....8.625
Harvey,Ill. B5 .....8.325
Lackawanna,N.Y. B2 ..8.325
LosAngeles S30 .....10.10
LosAngeles P2 .....10.20
Mansfield,Mass. B5 ...8.625
Massillon,O. R2, R8 ...8.325
Midland,Pa. C18 .....8.325
Monaca,Pa. S17 .....8.325
Newark,N.J. W18 .....8.50
Plymouth,Mich. P5 ....8.525
S.Chicago W14 .....8.325
SpringCity Pa. K3 .....8.50
Struthers,O. Y1 .....8.325
Warren,O. C17 .....8.325
Waukegan,Ill. A7 .....8.325
Worcester,Mass. A7 ...8.625
Youngstown F3, Y1 ....8.325

BARS, Reinforcing (To Fabricators)

Ala.City,Ala. R2 .....5.075
Atlanta A11 .....5.575
Birmingham C15 .....5.325
Bridgeport,Conn. N19 ..5.30
Buffalo R2 .....5.075
Cleveland R2 .....5.075
Ecorse,Mich. G5 .....5.425
Emeryville,Calif. J7 ....5.85

Fairfield,Ala. T2 ....5.075
Fairless,Pa. U5 .....5.225
Ft. Worth,Tex.(42) T4..5.525
Gary,Ind. U5 .....5.075
Houston S5 .....5.325
Ind.Harbor,Ind. I-2, Y1 5.075
Johnstown,Pa. B2 ....5.075
Joliet,Ill. P22 .....5.075
KansasCity,Mo. S5 ....5.325
Lackawanna,N.Y. B2 ..5.075
LosAngeles B3 .....5.775
Milton,Pa. M18 .....5.225
Minnequa,Colo. C10 ..5.525
Niles,Calif. P1 .....5.85
Pittsburg,Calif. C11 ..5.775
Pittsburgh J5 .....5.075
Portland,Oreg. O4 .....5.85
SandSprings,Okla. S5 ..5.575
Seattle B3, N14 .....5.825
S.Chicago,Ill. R2 ....5.075
S.Duquesne,Pa. U5 ....5.075
S.SanFrancisco B3 ....5.825
SparrowsPoint,Md. B2 .5.075
Sterling,Ill.(1) N15 ..5.075
Sterling,Ill. N15 .....5.175
Struthers,O. Y1 .....5.075
Torrance,Calif. C11 ..5.775
Youngstown R2, U5 ..5.075

BARS, Reinforcing (Fabricated; to Consumers)

Boston B2 .....7.30
Chicago U8 .....6.81
Cleveland U8 .....6.79
Johnstown,Pa. ¼-1" B2 6.73
KansasCity,Mo. S5 ....7.00
Lackawanna,N.Y. B2 ..6.50
Marion,O. P11 .....6.70
NewYork U8 .....7.20
Pittsburgh J5, U8 .....6.75
Seattle B3, N14 .....7.20
SparrowsPt. ½-1" B2 ..6.73
Williamsport,Pa. S19 ..6.65

RAIL STEEL BARS

ChicagoHts.(3) C2, I-2 5.075
ChicagoHts.(4) I-2 ....6.10
ChicagoHts.(4) C2 ....5.65
Ft.Worth,Tex.(26) T4..5.525
Franklin,Pa.(3) F5 ....5.10
Franklin,Pa.(4) F5 ....6.10
JerseyShore,Pa.(4) J8 ..5.50
Marion,O.(3) P11 .....5.10
Moline,Ill.(3) R2 ....5.225
Tonawanda(3) B12 ....5.65
Tonawanda(4) B12 ....6.15
Williamsport,Pa.(3) S19 5.15

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 13.15
Economy,Pa.(D.R.)B14 16.35
Economy(Staybolt)B14, 16.80
McK.Rks.(S.R.) L5 ...13.15
McK.Rks.(D.R.) L5 ...18.00
McK.Rks.(Staybolt) L5 19.15

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

Ala.City,Ala. R2 ....4.675
Allenport,Pa. P7 .....4.675
Ashland,Ky.(8) A10 ..4.675
Cleveland J5, R2 .....4.675
Conshohocken,Pa. A3..4.725
Detroit(8) M1 .....4.775
Ecorse,Mich. G5 .....4.775
Fairfield,Ala. T2 .....4.675
Fairless,Pa. U5 .....4.725
Fontana,Calif. K1 ....5.525
Gary,Ind. U5 .....4.675
Geneva,Utah C11 .....4.775
GraniteCity,Ill.(8) G4 ..4.875
Ind.Harbor,Ind. I-2, Y1 4.675
Irvin,Pa. U5 .....4.675
Lackawanna,N.Y. B2 ..4.675
Munhall,Pa. U5 .....4.675
Newport,Ky.(8) A2 ..4.675
Niles,O. M21 .....4.675
Pittsburg,Calif. C11 ..5.375
Pittsburgh J5 .....4.675
Portsmouth,O. P12 ....4.675
Riverdale,Ill. A1 .....4.675
Sharon,Pa. S3 .....4.675
S.Chicago,Ill. W14 ....4.675
SparrowsPoint,Md. B2 .4.675
Steubenville,O. W10 ..4.675
Warren,O. R2 .....4.675
Weirton,W.Va. W6 ....4.675
Youngstown U5, Y1 ...4.675

SHEETS, H.R. (19 Ga. & Lighter)

Niles,O. M21 .....5.75

SHEETS, H.R. Alloy

Gary,Ind. U5 .....7.75
Ind.Harbor,Ind. Y1 .....7.75
Irvin,Pa. U5 .....7.75
Newport,Ky. A2 .....7.75
Youngstown Y1, U5 ....7.75

SHEETS, H.R. (14 Ga. & Heavier) High-Strength Low-Alloy

Cleveland J5, R2 .....6.90
Conshohocken,Pa. A3 ..6.95
Ecorse,Mich. G5 .....7.00
Fairfield,Ala. T2 .....6.90
Fairless,Pa. U5 .....6.95
Fontana,Calif. K1 .....7.75
Gary,Ind. U5 .....6.90
Ind.Harbor,Ind. I-2, Y1 6.90
Irvin,Pa. U5 .....6.90
Lackawanna(35) B2 ...6.90
Munhall,Pa. U5 .....6.90
Pittsburgh J5 .....6.90
S.Chicago,Ill. U5 .....6.90
SparrowsPoint(36) B2 ..6.90
Warren,O. R2 .....6.90
Weirton,W.Va. W6 ....6.90
Youngstown U5, Y1 ...6.90

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ..4.925
Cleveland R2 .....5.425
Ind.Harbor,Ind. I-2 ..4.925
Warren,O. R2 .....5.425

SHEETS, Cold-Rolled Steel (Commercial Quality)

Allenport,Pa. P7 .....5.75
Cleveland J5, R2 .....5.75
Conshohocken,Pa. A3 ..5.80
Detroit M1 .....5.75
Ecorse,Mich. G5 .....5.85
Fairfield,Ala. T2 .....5.75
Fairless,Pa. U5 .....5.80
Follansbee,W.Va. F4 ..5.75
Fontana,Calif. K1 .....7.00
Gary,Ind. U5 .....5.75
GraniteCity,Ill. G4 ....5.95
Ind.Harbor,Ind. I-2, Y1 5.75
Irvin,Pa. U5 .....5.75
Lackawanna,N.Y. B2 ..5.75
Mansfield,O. E6 .....5.75
Middletown,O. A10 ....5.75
Newport,Ky. A2 .....5.75
Pittsburg,Calif. C11 ....6.70
Pittsburgh J5 .....5.75
Portsmouth,O. P12 ....5.75
SparrowsPoint,Md. B2 ..5.75
Steubenville,O. W10 ....5.75
Warren,O. R2 .....5.75
Weirton,W.Va. W6 ....5.75
Yorkville,O. W10 .....5.75
Youngstown Y1 .....5.75

SHEETS, Cold-Rolled High-Strength, Low-Alloy

Cleveland J5, R2 ....8.525
Ecorse,Mich. G5 .....8.625
Fairless,Pa. U5 .....8.575
Fontana,Calif. K1 ....9.775
Gary,Ind. U5 .....8.525
IndianaHarbor,Ind. Y1..8.525
Irvin,Pa. U5 .....8.525
Lackawanna(37) B2 ..8.525
Pittsburgh J5 .....8.525
SparrowsPoint(38) B2 .8.525
Warren,O. R2 .....8.525
Weirton,W.Va. W6 ....8.525
Youngstown Y1 .....8.525

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....6.50
Middletown,O. A10 ....6.25
Warren,O. R2 .....6.50

SHEETS, Culvert	Cu Steel	Cu Fe
Ashland,Ky. A10	6.65	6.90
Canton,O. R2	..6.65	7.15
Fairfield T2	....6.65	6.90
Gary,Ind. U5	....6.65	6.90
GraniteCity,Ill. G4	6.85	...
Ind.Harbor I-2	..6.65	6.90
Irvin,Pa. U5	....6.65	6.90
Kokomo,Ind. C16	6.75	...
MartinsFry. W10	6.65	...
Pittsburgh J5	....6.65	...
Pitts.,Calif. C11	..7.40	...
SparrowsPt. B2	..6.65	...

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ....6.90
MartinsFry.,O. W10 ....6.90

SHEETS, Galvanized Steel Hot-Dipped

Ala.City,Ala. R2 .....6.30‡
Ashland,Ky. A10 .....6.30†
Canton,O. R2 .....6.30‡
Dover,O. R1 .....6.30†
Fairfield,Ala. T2 .....6.30†
Gary,Ind. U5 .....6.30†
GraniteCity,Ill. G4 ....6.50*
Ind.Harbor,Ind. I-2 ...6.30†
Irvin,Pa. U5 .....6.30†
Kokomo,Ind. C16 ....6.40‡
MartinsFerry,O. W10 ..6.30*
Middletown,O. A10 ...6.30†
Pittsburg,Calif. C11 ..7.05*
Pittsburgh J5 .....6.30†
SparrowsPt.,Md. B2 ..6.30†
Warren,O. R2 .....6.30†
Weirton,W.Va. W6 ....6.30*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....7.025

SHEETS, Galvanized High-Strength Low-Alloy

Irvin,Pa. U5 .....9.275
SparrowsPoint(39) B2..9.275

SHEETS, Galvannealed Steel

Canton,O. R2 .....6.70
Irvin,Pa. U5 .....6.70

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 .....6.55
Middletown,O. A10 ....6.55

SHEETS, Electrogalvanized

Cleveland(28) R2 ....7.125
Niles,O.(28) R2 .....7.125
Weirton,W.Va. W6 ....6.975

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 8.95
Butler,Pa. A10 (type 2) 9.05

SHEETS, Enameling Iron

Ashland,Ky. A10 .....6.325
Cleveland R2 .....6.325
Gary,Ind. U5 .....6.325
GraniteCity,Ill. G4 ....6.525
Ind.Harbor,Ind. I-2, Y1 6.325
Irvin,Pa. U5 .....6.325
Middletown,O. A10 ....6.325
Niles,O. M21 .....6.325
Youngstown Y1 .....6.325

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ..8.35
Ind.Harbor,Ind. I-2 ..8.175
Yorkville,O. W10 ....8.175

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va. W10 6.70
Gary,Ind. U5 .....6.70
Mansfield,O. E6 .....6.70
Middletown,O. A10 ....6.70
Niles,O. M21 .....6.70
Weirton,W.Va. W6 ....6.70

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.10

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U.S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div. Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo-Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div. H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept. Wickwire Spencer Steel Division
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.

D2 Detroit Steel Corp.
D3 Dearborn Division, Sharon Steel Corp.
D4 Disston Division, H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 EasternGas&FuelAssoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins, E., Steel Tube
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Div., Jones & Laughlin Steel Corp.
M14 McInnes Steel Co.
M16 Md. Fine&Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Division, Merritt-Chapman&Scott
M21 Mallory-Sharon Titanium Corp.

N1 National Standard Co.
N2 National Supply Co.
N3 National Tube Div., U.S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N14 Northwest.SteelRoll.Mill
N15 Northwestern S.&W.Co.
N19 Northeastern Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co. Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 Reliance Div.,EatonMfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service

T2 Tenn.Coal & Iron Div., U.S. Steel Corp.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U.S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U.S. Steel Supply Div., U.S. Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Div., H. K. Porter Co. Inc.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet&Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 ..4.675
Allenport,Pa. P7 .....4.675
Alton,Ill. L1 .....4.875
Ashland,Ky.(8) A10 ...4.675
Atlanta A11 .....4.875
Bessemer,Ala. T2 .....4.675
Birmingham C15 .....4.925
Buffalo(27) R2 .....4.675
Conshohocken,Pa. A3 ..4.725
Detroit M1 .....4.775
Ecorse,Mich. G5 .....4.775
Fairfield,Ala. T2 .....4.675
Fontana,Calif. K1 ....5.525
Gary,Ind. U5 .....4.675
Houston S5 .....4.925
Ind.Harbor,Ind. I-2, Y1 4.675
Johnstown,Pa.(25) B2..4.675
KansasCity,Mo. S5 ....4.925
Lackaw'na,N.Y.(25) B2 4.675
LosAngeles(25) B3 ....5.425
Minnequa,Colo. C10 ...5.775
Pittsburg Calif. C11 ...5.425
Riverdale,Ill. A1 .....4.675
SanFrancisco S7 .....5.95
Seattle(25) B3 .....5.675
Seattle N14 .....5.675
Sharon,Pa. S3 .....4.675
S.Chicago,Ill. W14 .....4.675
S.SanFrancisco(25) B3.5.425
SparrowsPoint,Md. B2..4.675
Sterling,Ill.(1) N15 ....4.675
Sterling,Ill. N15 .....4.775
Torrance,Calif. C11 ...5.425
Warren,O. R2 .....4.675
Weirton,W.Va. W6 ....4.675
Youngstown U5 .....4.675

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18 .....7.75
Gary,Ind. U5 .....7.75
Ind.Harbor,Ind. Y1 ....7.75
LosAngeles B3 .....8.95
Newport,Ky. A2 .....7.75
Sharon,Pa. S3 .....7.75
S.Chicago,Ill. W14 .....7.75
Youngstown U5, Y1 ....7.75

STRIP, Hot-Rolled High-Strength, Low-Alloy

Bessemer,Ala. T2 .....6.95
Conshohocken,Pa. A3 ...6.95
Ecorse,Mich. G5 .....7.05
Fairfield,Ala. T2 .....6.95
Gary,Ind. U5 .....6.95
Houston S5 .....7.20
Ind.Harbor,Ind. I-2, Y1..6.95
KansasCity,Mo. S5 .....7.20
Lackawanna,N.Y. B2 ...6.95
LosAngeles(25) B3 .....7.70
Seattle(25) B3 .....7.95
Sharon,Pa. S3 .....6.95
S.SanFrancisco(25) B3 ..7.70
SparrowsPoint,Md. B2...6.95
Warren,O. R2 .....6.95
Weirton,W.Va. W6 .....6.95
Youngstown U5, Y1 ....6.95

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ...4.925
Warren,O. R2 .....5.425

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 .....6.85
Baltimore T6 .....6.85
Boston T6 .....7.40
Buffalo S40 .....6.85
Cleveland A7, J5 .....6.85
Conshohocken,Pa. A3 ...6.90
Dearborn,Mich. D3 ....6.95
Detroit D2, M1, P20....6.95
Dover,O. G6 .....6.85
Ecorse,Mich. G5 .....6.95
Follansbee,W.Va. F4 ...6.85
Fontana,Calif. K1 .....8.70
FranklinPark,Ill. T6 ...6.95
Ind.Harbor,Ind. Y1 ....6.85
Indianapolis C8 .....7.00
LosAngeles C1 .....8.90
NewBedford,Mass. R10..7.30
NewBritain(10) S15 ....6.85
NewCastle,Pa. B4, E5 ..6.85
NewHaven Conn. D2 ...7.30
NewKensington,Pa. A6..6.85
Pawtucket,R.I. R3 .....7.50
Pawtucket,R.I. N8 .....7.40
Pittsburgh J5 .....6.85
Riverdale,Ill. A1 .....6.95
Rome,N.Y.(32) R6 .....6.85
Sharon,Pa. S3 .....6.85
Trenton,N.J.(31) R5 ....8.30
Wallingford,Conn. W2 ..7.30
Warren,O. R2, T5 .....6.85
Weirton,W.Va. W6 .....6.85
Worcester,Mass. A7 .....7.40
Youngstown C8, Y1 ....6.85

STRIP, Cold-Rolled Alloy

Boston T6 .....14.90
Carnegie,Pa. S18 .....14.55
Cleveland A7 .....14.55
Dover,O. G6 .....14.55
FranklinPark,Ill. T6 ..14.55
Harrison,N.J. C18 .....14.55
Indianapolis C8 .....14.70
Pawtucket,R.I. N8 ....14.90
Sharon,Pa. S3 .....14.55
Worcester,Mass. A7 ...14.85
Youngstown C8 .....14.55

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7 .....10.00
Dearborn,Mich. D3 ....10.10
Dover,O. G6 .....10.10
Ecorse,Mich. G5 .....10.10
Ind.Harbor,Ind. Y1 ....10.20
Sharon,Pa. S3 .....10.00
Warren,O. R2 .....10.00
Weirton,W.Va. W6 ....10.00
Youngstown Y1 .....10.20

STRIP, Cold-Finished Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.20	10.40	12.60	15.60	18.55
Boston T6	9.20	10.40	12.60	15.60	18.55
Bristol,Conn. W1	...	10.40	12.60	15.60	18.55
Carnegie,Pa. S18	8.65	10.10	12.30	15.30	....
Cleveland A7	8.65	10.10	12.30	15.30	18.25
Cleveland C7	...	10.10	12.30	15.30	18.25
Dover,O. G6	8.65	10.10	12.30	15.30	18.25
Detroit D2	8.75	10.20	12.40	15.40	....
Dearborn,Mich. D3	8.75	10.20	12.40	....	....
FranklinPark,Ill. T6	8.75	10.10	12.30	15.30	18.25
Harrison,N.J. C18	...	....	12.60	15.60	18.55
Indianapolis C8	8.80	10.25	12.30	15.30	18.25
LosAngeles C1	10.85	12.30	14.50	....	....
NewBritain,Conn.(10) S15.	8.65	10.10	12.30	15.30	18.25
NewCastle,Pa. B4, E5 ...	8.65	10.10	12.30	15.30	....
NewHaven Conn. D2	9.10	10.40	12.60	15.60	....
NewKensington,Pa. A6 ..	8.65	10.10	12.30	15.30	....
New York W3	...	10.40	12.60	15.60	18.55
Pawtucket,R.I. N8	9.20	10.40	12.60	15.60	18.55
Riverdale,Ill. A1	8.75	10.10	12.30	15.30	18.25
Rome,N.Y.(32) R6	8.65	10.10	12.30	15.30	18.25
Sharon,Pa. S3	8.65	10.10	12.30	15.30	18.25
Trenton,N.J. R5	...	10.40	12.60	15.60	18.55
Wallingford,Conn. W2 ...	9.10	10.40	12.60	15.60	18.45
Warren,O. T5	8.65	10.10	12.30	15.30	18.25
Worcester,Mass. A7, T6 ..	9.20	10.40	12.60	15.60	18.55
Youngstown C8	8.65	10.10	12.30	15.30	18.25

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 .....7.60

STRIP, C.R. Electrogalvanized

Cleveland A7 .....6.85*
Dover,O. G6 .....6.85*
Riverdale,Ill. A1 .....6.95*
Warren,O. B9, T5 ....6.85*
Worcester,Mass. A7 ...7.40*
Youngstown C8 .....6.85*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Sharon,Pa. S3 .....6.975

TIGHT COOPERAGE HOOP

Atlanta A11 .....5.40
Riverdale,Ill. A1 .....5.25
Sharon,Pa. S3 .....5.10
Youngstown U5 .....5.10

Spring Steel (Tempered)

	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	17.10	20.95	25.30
Buffalo W12	17.10	....	....
FranklinPark,Ill. T6	17.15	21.00	25.35
Harrison,N.J. C18	17.10	20.95	25.30
NewYork W3	17.10	20.95	25.30
Palmer,Mass. W12	17.10	....	....
Trenton,N.J. R5	17.10	20.95	25.30
Worcester,Mass. A7, T6	17.10	20.95	25.30
Youngstown C8	17.45	21.30	25.65

SILICON STEEL

H.R. SHEETS(22 Ga., cut lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10..	...	....	11.00	12.05	13.05
Brackenridge,Pa. A4	...	....	11.00	12.05	13.05
Mansfield,O. E6	9.20	10.35	11.00	12.05	13.05
Newport,Ky. A2	9.20	10.35	11.00	12.05	13.05
Niles,O. M21	9.20	10.35	11.00	12.05	....
Vandergrift,Pa. U5	...	10.35	11.00	12.05	13.05
Warren,O. R2	9.20	10.35	11.00	12.05	....
Zanesville,O. A10	...	10.35	11.00	12.05	13.05
Zanesville,O. A10 (FP coils)	...	10.85	11.525	12.575	13.55
Zanesville,O. A10 (SP coils)	...	....	11.025	12.075	13.05

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
Brackenridge,Pa. A4	...	....	11.525	12.575	13.55
GraniteCity,Ill. G4	9.40*	10.55*	11.225*	12.275*	....
IndianaHarbor,Ind. I-2...	9.20†	10.35*	11.025*	12.075*	....
Mansfield,O. E6	9.70	10.85	11.525	12.575	13.55
Vandergrift,Pa. U5	9.20*	10.35*	11.025*	12.075*	13.05*
Vandergrift,Pa. U5	...	10.85†	11.525†	12.575†	13.55†
Warren,O. R2	9.20*	10.85	11.525	12.575	13.55

H.R. SHEETS (22 Ga., cut lengths)	Transformer Grades T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	14.05	14.60	15.10	16.15
Brackenridge,Pa. A4	14.05	....	....	....
Vandergrift,Pa. U5	14.05	14.60	15.10	16.15
Zanesville,O. A10	14.05	14.60	15.10	16.15

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4.	16.90	18.50	19.00	19.50	....	
Butler,Pa. A10	....	....	18.50	19.00	19.50	....
Vandergrift,Pa. U5 ..	15.90	16.90	18.50	19.00	19.50	14.55**
Warren,O. R2	....	....	....	....	....	14.55‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. **Cut lengths, ¾-cent lower.

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$8.40	$8.65	$9.05
Fairfield,Ala. T2	8.50	8.75	9.15
Fairless,Pa. U5	8.50	8.75	9.15
Fontana,Calif. K1	9.15	9.40	9.80
Gary,Ind. U5	8.40	8.65	9.05
GraniteCity,Ill. G4	8.50	8.75	9.15
IndianaHarbor,Ind. I-2, Y1	8.40	8.65	9.05
Irvin,Pa. U5	8.40	8.65	9.05
Niles,O. R2	8.40	8.65	9.05
Pittsburg,Calif. C11	9.15	9.40	9.80
SparrowsPoint,Md. B2	8.50	8.75	9.15
Weirton,W.Va. W6	8.40	8.65	9.05
Yorkville,O. W10	8.40	8.65	9.05

ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa,Pa. J5	7.425	7.625	....
Niles,O. R2	7.425	7.625	7.925

TINPLATE, American	1.25 lb	1.50 lb
Aliquippa,Pa. J5. .	$9.70	$9.95
Fairfield,Ala. T2 .	9.80	10.05
Fairless,Pa. U5 . .	9.80	10.05
Fontana,Calif. K1	10.45	10.70
Gary,Ind. U5	9.70	9.95
Irvin,Pa. U5	9.70	9.95
Pitts.,Calif. C11.	10.45	10.70
Sp.Pt.,Md. B2 ...	9.80	10.05
Weirton,W.Va. W6	9.70	9.95
Yorkville,O. W10.	9.70	9.95

BLACK PLATE (Base Box)

Aliquippa,Pa. J5 .....$7.50
Fairfield,Ala. T2 .....7.60
Fairless,Pa. U5 .....7.60
Fontana,Calif. K1 .....8.25
Gary,Ind. U5 .....7.50
GraniteCity,Ill. G4 .....7.60
Ind.Harbor,Ind. I-2, Y1..7.50
Irvin,Pa. U5 .....7.50

Niles,O. R2 .....7.50
Pittsburg,Calif. C11 ....8.25
SparrowsPoint,Md. B2 ..7.60
Weirton,W.Va. W6 .....7.50
Yorkville,O. W10 .....7.50

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa,Pa. J5 .....$7.75
Gary,Ind. U5 .....7.15
GraniteCity,Ill. G4 .....7.25
Ind.Harbor,Ind. Y1 ....7.15
Irvin,Pa. U5 .....7.15
Yorkville,O. W10 .....7.15

MANUFACTURING TERNES (Special Coated; Base Box)

Gary,Ind. U5 .....$9.20
Irvin,Pa. U5 .....9.20

ROOFING SHORT TERNES (8 lb Coated; Base Box)

Gary,Ind. U5 .....$10.75

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2 ...7.20
Aliquippa,Pa. J5 .....7.20
Alton,Ill. L1 .....7.40
Atlanta A11 .....7.40
Bartonville,Ill. K4 .....7.30
Buffalo W12 .....7.20
Chicago W13 .....7.20
Cleveland A7, C20 .....7.20
Crawfordsville,Ind. M8..7.30
Donora,Pa. A7 .....7.20
Duluth A7 .....7.20
Fairfield,Ala. T2 .....7.20
Fostoria,O.(24) S1 .....7.30
Houston S5 .....7.45
Jacksonville,Fla. M8 ...7.55
Johnstown,Pa. B2 .....7.20
Joliet,Ill. A7 .....7.20
KansasCity,Mo. S5 .....7.45
Kokomo,Ind. C16 .....7.30
LosAngeles B3 .....8.15
Minnequa,Colo. C10 ....7.45
Monessen,Pa. P7, P16..7.20
N.Tonawanda,N.Y. B11..7.20
Palmer,Mass. W12 .....7.50
Pittsburg,Calif. C11 ....8.15
Portsmouth,O. P12 .....7.20
Rankin,Pa. A7 .....7.20
S.Chicago,Ill. R2 .....7.20
S.SanFrancisco C10 ....8.15
SparrowsPoint,Md. B2 ..7.30
Sterling,Ill.(1) N15 .....7.20
Sterling,Ill. N15 .....7.30
Struthers,O. Y1 .....7.20
Waukegan,Ill. A7 .....7.20
Worcester,Mass. A7 ....7.50

WIRE, Gal'd ACSR for Cores

Bartonville,Ill. K4 .....11.90
Buffalo W12 .....11.90
Cleveland A7 .....11.90
Donora,Pa. A7 .....11.90
Duluth A7 .....11.90
Johnstown,Pa. B2 .....11.90
Minnequa,Colo. C10 ..12.025
Monessen,Pa. P16 .....11.90
Muncie,Ind. I-7 .....12.10
NewHaven,Conn. A7 ..12.20
Palmer,Mass. W12 .....12.20
Pittsburg,Calif. C11 ....12.70
Portsmouth,O. P12 .....11.90
Roebling,N.J. R5 .....12.20
SparrowsPt.,Md. B2 ....12.00
Struthers,O. Y1 .....11.75
Trenton,N.J. A7 .....12.20
Waukegan,Ill. A7 .....11.90
Worcester,Mass. A7 ...12.20

WIRE, Upholstery Spring

Aliquippa,Pa. J5 .....8.70
Alton,Ill. L1 .....8.90
Buffalo W12 .....8.70
Cleveland A7 .....8.70
Donora,Pa. A7 .....8.70
Duluth A7 .....8.70
Johnstown,Pa. B2 .....8.70
KansasCity Mo. S5 .....8.65
Minnequa,Colo. C10 ....8.90
LosAngeles B3 .....9.65
Monessen,Pa. P7, P16 ..8.70
NewHaven,Conn. A7 ...9.00
Palmer,Mass. W12 .....9.00
Pittsburg,Calif. C11 ....9.65
Portsmouth,O. P12 .....8.70
Roebling,N.J. R5 .....8.70
S.Chicago,Ill. R2 .....8.70
S.SanFrancisco C10 ....9.35
SparrowsPt.,Md. B2 ....8.80
Struthers,O. Y1 .....8.40
Trenton,N.J. A7 .....9.00
Waukegan,Ill. A7 .....8.70
Worcester,Mass. A7 ....9.00

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5 .....9.025
Alton,Ill. L1 .....9.225
Bartonville,Ill. K4 .....9.125
Buffalo W12 .....9.025
Cleveland A7 .....9.025
Donora,Pa. A7 .....9.025
Duluth A7 .....9.025
Fostoria,O. S1 .....9.075
Johnstown,Pa. B2 .....9.025
LosAngeles B3 .....9.975
Milbury,Mass.(12) N6..9.325
Minnequa,Colo. C10 ...9.275
Monessen,Pa. P7, P16..9.025
Muncie,Ind. I-7 .....9.225
Palmer,Mass. W12 .....9.325
Pittsburg,Calif. C11....9.975
Portsmouth,O. P12 .....9.025
Roebling,N.J. R5 .....9.025
S.Chicago,Ill. R2 .....9.025
S.SanFrancisco C10 ...9.675
SparrowsPt.,Md. B2 ...9.125
Struthers,O. Y1 .....8.725
Trenton,N.J. A7 .....9.325
Waukegan,Ill. A7 .....9.025
Worcester J4, T6, W12..9.025
Worcester,Mass. A7 ...9.325

WIRE, Fine & Weaving (8" Coils)

Alton,Ill. L1 .....14.35
Bartonville,Ill. K4 .....14.25
Buffalo W12 .....14.45
Chicago W13 .....14.15
Cleveland A7 .....14.45
Crawfordsville,Ind. M8.14.25
Fostoria,O. S1 .....14.45
Jacksonville,Fla. M8 ...14.50
Johnstown,Pa. B2 .....14.15
Kokomo,Ind. C16 .....14.15
Monessen,Pa. P6 .....14.20
Muncie,Ind. I-7 .....14.35
Palmer,Mass. W12 .....14.75
Palmer,Mass. W12 .....14.75
Roebling,N.J. C10 .....14.45
S.SanFrancisco C10 ....14.50
Waukegan,Ill. A7 .....14.45
Worcester,Mass. A7, T6. 14.75

ROPE WIRE (A)

Bartonville,Ill. K4 ....12.00
Buffalo W12 .....12.00
Fostoria,O. S1 .....12.00
Johnstown,Pa. B2 .....11.55
Monessen,Pa. P7 .....11.55
Muncie,Ind. I-7 .....11.75
Palmer,Mass. W12 ....12.30
Portsmouth,O. P12 ....12.00
Roebling,N.J. R5 .....12.30
SparrowsPt.,Md. B2 ....11.65
Struthers,O. Y1 .....11.55
Worcester,Mass. J4 ....11.85

(A) Plow and Mild Plow; add 0.25c for Improved Plow

WIRE

WIRE, Tire Bead

Bartonville,Ill. K4	....15.75
Monessen,Pa. P16	....15.45
Roebling,N.J. R5	.....16.10

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	.....10.75
Baltimore T6	.....11.05
Boston T6	.....11.05
Buffalo W12	.....10.75
Cleveland A7	.....10.75
Crawfordsville,Ind. M8	10.75
Dover,O. G6	.....10.75
Fostoria,O. S1	*.....11.05*
FranklinPark,Ill. T6	..10.85
Kokomo,Ind. C16	.....10.75
Massillon,O. R8	.....10.75
Milwaukee C23	.....10.95
Monessen,Pa. P7, P16	10.75
NewKensington,Pa. A6	10.75
Palmer,Mass. W12	....11.05
Pawtucket,R.I. N8	....11.05
Riverdale,Ill. A1	.....10.85
Rome,N.Y. R6	.....10.75
Trenton,N.J. R5	.....11.05
Worcester,Mass. A7, T6	11.05

NAILS & POLISHED STAPLES,

Stock	Col.
AlabamaCity,Ala. R2	..164
Aliquippa,Pa. J5	164
Atlanta A11	166
Bartonville,Ill. K4	166
Crawfordsville,Ind. M8	.166
Donora,Pa. A7	164
Duluth A7	164
Fairfield,Ala. T2	164
Houston,Tex. S5	169
Jack'ville,Fla. (20) M8	.175
Johnstown,Pa. B2	164
Joliet,Ill. A7	164
KansasCity,Mo. S5	169
Kokomo,Ind. C16	166
Minnequa,Colo. C10	169
Monessen,Pa. P7	164
Pittsburg,Calif. C11	183
Rankin,Pa. A7	164
S.Chicago,Ill. R2	164
SparrowsPt.,Md. B2	166
Sterling,Ill. (7) N15	166
Worcester,Mass. A7	170

NAILS, Stock — Col.

Chicago W13	164
Cleveland A9	170

(To Wholessalers; per cwt)

Galveston,Tex. D7	....$8.75

NAILS, Cut (100 lb keg)
To Dealers (33)

Conshohocken,Pa. A3	..$9.80
Wheeling,W.Va. W10	..9.80

TIE WIRE, Automatic Baler (14½ Ga.)(Per 97 lb Net Box)
Coil No. 3150

AlabamaCity,Ala. R2	..$9.53
Atlanta A11	.....9.63
Bartonville,Ill. K4	....9.63
Buffalo W12	.....9.93
Chicago W13	.....9.53
Crawfordsville,Ind. M8	..9.63
Donora,Pa. A7	.....9.53
Duluth A7	.....9.53
Fairfield,Ala. T2	.....9.53
Houston S5	.....9.78
Jack'ville,Fla. M8	....10.09
Johnstown,Pa. B2	.....9.53
Joliet,Ill. A7	.....9.53
KansasCity,Mo. S5	....9.78
Kokomo,Ind. C16	.....9.63
LosAngeles B3	.....10.32
Minnequa,Colo. C10	*....10.07*
Pittsburg,Calif. C11	....10.31
S.Chicago,Ill. R2	.....9.53
S.SanFrancisco C10	...10.31
SparrowsPt.,Md. B2	....9.63
Sterling,Ill. (37)N15	....9.63

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	..$9.85
Atlanta A11	.....9.95
Bartonville,Ill. K4	.....9.95
Buffalo W12	.....10.25
Chicago W13	.....9.85
Crawfordsville,Ind. M8	..9.95
Donora,Pa. A7	.....9.85
Duluth A7	.....9.85
Fairfield,Ala. T2	.....9.85
Houston S5	.....10.10
Jacksonville,Fla. M8	...10.41
Johnstown,Pa. B2	....9.85
Joliet,Ill. A7	.....9.85
KansasCity,Mo. S5	....10.10
Kokomo,Ind. C16	.....9.95
LosAngeles B3	.....10.65
Minnequa,Colo. C10	*....10.40*
Pittsburg,Calif. C11	...10.65
S.Chicago,Ill. R2	.....9.85
S.SanFrancisco C10	...10.65
SparrowsPt.,Md. B2	...9.95
Sterling,Ill. (37) N15	...9.95

Coil Interim

AlabamaCity,Ala. R2	.$9.90
Atlanta A11	.....10.00
Bartonville,Ill. K4	....10.00
Buffalo W12	.....10.30
Chicago W13	.....9.90
Crawfordsville,Ind. M8	.10.00
Donora,Pa. A7	.....9.90
Duluth A7	.....9.90
Fairfield,Ala. T2	.....9.91
Houston S5	.....10.15
Jacksonville,Fla. M8	..10.46
Johnstown,Pa. B2	....9.90
Joliet,Ill. A7	.....9.90
KansasCity,Mo. S5	....10.15
Kokomo,Ind. C16	....10.00
LosAngeles B3	.....10.70
Minnequa,Colo. C10	*....10.45*
Pittsburg,Calif. C11	...10.70
S.Chicago,Ill. R2	.....9.90
S.SanFrancisco C10	...10.70
SparrowsPt.,Md. B2	..10.00
Sterling,Ill. (37) N15	..10.00

BALE TIES, Single Loop — Col.

AlabamaCity,Ala. R2	..190
Atlanta A11	192
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	.192
Donora,Pa. A7	190
Duluth A7	190
Fairfield,Ala. T2	190
Houston S5	195
Jacksonville,Fla. M8	...197
Joliet,Ill. A7	190
KansasCity,Mo. S5	195
Kokomo,Ind. C16	192
Minnequa,Colo. C10	195
Pitts.,Calif. C11	214
S.Chicago,Ill. R2	190
S.SanFrancisco C10	214
Sterling,Ill. (7) N15	192
SparrowsPoint,Md. B2	..192
Tonawanda,N.Y. B12	..169
Williamsport,Pa. S19	...175

FENCE POSTS

ChicagoHts.,Ill. C2, I-2	.167
Duluth A7	167
Franklin,Pa. F5	167
Huntington,W.Va. W7	..169
Johnstown,Pa. B2	167
Marion,O. P11	167
Minnequa,Colo. C10	172
Sterling,Ill. (1) N15	167
Tonawanda,N.Y. B12	..169
Williamsport,Pa. S19	...175

WIRE, Barbed — Col.

AlabamaCity,Ala. R2	..184**
AliquippaPa. J5	.....181§
Atlanta A11	190
Bartonville,Ill. K4	190
Crawfordsville,Ind. M8	..190
Donora,Pa. A7	.....184†
Duluth A7	.....184†
Fairfield,Ala. T2	.....184†
Houston,Tex. S5	.....189**
Jacksonville,Fla. M8	...195
Johnstown,Pa. B2	.....188*
Joliet,Ill. A7	.....184†
KansasCity,Mo. S5	....189**
Kokomo,Ind. C16	.....186†
Minnequa,Colo. C10	...189**
Monessen,Pa. P7	.....188*
Pittsburg,Calif. C11	....204†
Rankin,Pa. A7	.....184†
S.Chicago,Ill. R2	.....184**
S.SanFrancisco C10	..204**
SparrowsPoint,Md. B2	190*
Sterling,Ill. (7) N15	....190*

WOVEN FENCE, 9-15 Ga. — Col.

Ala.City,Ala. R2	....176**
Aliq'ppa,Pa. 9-14½ga.J5	179§
Atlanta A11	.....182*
Bartonville,Ill. K4	182
Crawfordsville,Ind. M8	..182
Donora,Pa. A7	.....176†
Duluth A7	.....176†
Fairfield,Ala. T2	.....176†
Houston,Tex. S5	....181**
Jacksonville,Fla. M8	187
Johnstown,Pa.(43) B2	..180*
Joliet,Ill. A7	.....176†
KansasCity,Mo. S5	....181**
Kokomo,Ind. C16	.....178†
Minnequa,Colo. C10	...181**
Monessen,Pa. 9 ga. P7	..180*
Pittsburgh,Calif. C11	..199†
Rankin,Pa. A7	.....176†
S.Chicago,Ill. R2	.....176**
Sterling,Ill. (7) N15	....182*

	An'ld	Galv.
WIRE (16 gage)	**Stone**	**Stone**
Ala.City,Ala.R2	15.70	17.25**
Aliq'ppa,Pa. J5	..15.70	17.50
Bartonville K4	..15.80	17.75
Buffalo W12	....16.10	....
Cleveland A7	....16.00	....
Crawf'dsville M8	15.80	17.35†
Fostoria,O. S1	*..16.50*	*18.05†*
Houston S5	...15.95	17.50**
Jacksonville M8	..16.05	18.00
Johnstown B2	..15.70	17.65*
Kan.City,Mo. S5	15.95	....
Kokomo C16	..15.80	17.35†
Minnequa C10	*..16.25*	*17.80**
P'im'r,Mass.W12	16.30	17.85†
Pitts.,Calif. C11	16.05	17.60†
SparrowsPt.	B2..15.80	17.75*
Sterling(37) N15	15.80	17.75*
Waukegan A7	..16.00	17.55†
Worcester A7	..16.30	....

WIRE, Merchant Quality

(6 to 8 gage)	An'ld	Galv.
Ala. City,Ala. R2	7.95	8.35**
Aliquippa J5	....7.95	8.475§
Atlanta (48) A11	8.05	8.65*
Bartonville(48) K4	.8.05	8.65
Buffalo W12	*.....8.20*	*8.75†*
Cleveland A7	*.....8.20*	....
Crawfordsville M8	.8.05	8.65
Donora,Pa. A7	*...8.20*	*8.75†*
Duluth A7	*.....8.20*	*8.75†*
Fairfield T2	*.....8.20*	*8.75†*
Houston(48) S5	.8.20	8.60**
Jacks'ville,Fla. M8	8.30	8.90
Johnstown B2(48)	*8.20*	*8.95**
Joliet,Ill. A7	*.....8.20*	*8.75†*
Kans.City(48) S5	8.20	8.60**
Kokomo C16	....8.05	8.45†
LosAngeles B3	...8.90	9.50*
Minnequa C10	*....8.45*	*9.00‡*
Monessen P7 (48)	7.95	8.55*
Palmer,Mass. W12.	*8.50*	*9.05†*
Pitts.,Calif. C11	*.9.15*	*9.70†*
Rankin,Pa. A7	*....8.20*	*8.75†*
S.Chicago R2	...7.95	8.35**
S.SanFran. C10	8.90	9.30**
Spar'owsPt. B2(48)	*8.30*	*9.05**
Sterling(37)(48)N15	8.05	8.65*
Struth'rs,O.(48)Y1	7.95	8.45‡
Worcester,Mass. A7	*8.50*	*9.05†*

Based on zinc price of: *13.50c. †5c. §10c. ‡Less than 10c. ††13c. **Subject to zinc equalization extras.

FASTENERS

(Base discounts, full container quantity, per cent off list, f.o.b. mill)

BOLTS

Carriage, Machine Bolts
Full Size Body (cut thread)
½ in. and smaller:

6 in. and shorter	52.5
Lower than 6 in.	43.5

⅝ in. thru 1 in.:

6 in. and shorter	43.5
Longer than 6 in.	41.5

1⅛ in. and larger:

All lengths	41.5

Undersized Body (rolled thread)
½ in. and smaller:

6 in. and shorter	52.5

Carriage, Machine, Lag Bolts
Hot Galvanized:
½ in. and smaller:

6 in. and shorter	32.0
Longer than 6 in.	19.0

⅝ in. thru 1 in.:

6 in. and shorter	16.0
Longer than 6 in.	16.0

1⅛ in. and larger:

All lengths	16.0

Lag Bolts
All diameters:

6 in. and shorter	52.5
Longer than 6 in.	44.5

Plow and Tap Bolts
½ in. and smaller by 6 in. and shorter 52.0
Larger than ½ in. or longer than 6 in. .. 44.5
Blank Bolts 44.5
Step, Elevator, Tire Bolts 52.0
Stove Bolts, Slotted

⅛ to ¼-in., incl., 3 in. and shorter	54.00
⅛ to ½-in., inclusive	54.00

NUTS

Reg. & Heavy Square Nuts:

All sizes	58.0

Square Nuts, Reg. &
Heavy, Hot Galvanized:

All sizes	44.0

Hex Nuts, Reg. &
Heavy, Hot Pressed:

¾ in. and smaller	61.5
⅞ in. to 1 in., incl.	57.5
1⅛ in. to 1½ in., incl.	62.5
1⅝ in. and larger	56.0

Hex Nuts, Reg. &
Heavy, Cold Punched:

¾ in. and smaller	61.5
⅞ in. to 1½ in., incl.	57.5
1⅝ in. and larger	56.0

Hex Nuts, All Types,
Hot Galvanized:

¾ in. and smaller	48.0
⅞ in. to 1 in. incl.	44.0
1⅛ in. to 1½ in., incl.	49.0

Hex Nuts, Semifinished,
Heavy (Incl. Slotted):

¾ in. and smaller	61.5
⅞ in. to 1½ in., incl.	57.5
1⅝ in. and larger	56.0

Hex Nuts, Finished (Incl. Slotted and Castellated):

1 in. and smaller	64.00
1⅛ in. to 1½ in., incl.	60.5
1⅝ in. and larger	56.0

Semifinished Hex Nuts, Reg. (Including Slotted):

⅝ in. and smaller	61.5
¾ in. to 1-in., incl.	64.0
1⅛ in. to 1.5-in., incl.	60.5
1⅝ in. and larger	56.0

CAP AND SET SCREWS
(Base discounts, packages, per cent off list, f.o.b. mill)
Hex Head Cap Screws, Coarse or Fine Thread, Bright:
6 in. and shorter:

⅝ in. and smaller	44.0
¾, ⅞ and 1 in. diam.	27.0

Longer than 6 in.:

⅝ in. and smaller	14.0
¾, ⅞ and 1 in. diam.	0.5

High Carbon, Heat Treated:
6 in. and shorter:

⅝ in. and smaller	31.0
¾, ⅞ and 1 in. diam.	9.0

Longer than 6 in.:

⅝ in. and smaller	+6
¾, ⅞ and 1 in. diam.	+24

Flat Head Cap Screws:

¾ in. and smaller	+65.0

Set Screws, Square Head, Cup Point, Coarse Thread
Through 1 in. diam.:

6 in. and shorter	11
Longer than 6 in.	+10

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.
Structural ½-in., larger 11.50
7/8-in. under List less 23%

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D.	B.W.	Seamless		Elec. Weld
In.	Gage	H.R.	C.D.	H.R.
1	13	....	24.55	22.84
1¼	13	....	29.07	22.68
1½	13	27.45	32.14	25.08
1¾	13	32.43	37.97	29.64
2	13	36.34	42.56	33.21
2¼	13	40.93	47.94	37.42
2½	12	44.42	52.03	40.61
2½	12	48.94	57.31	44.73
2¾	12	52.99	62.05	48.44
3	12	56.51	66.18	51.66

RAILWAY MATERIALS

	Standard			Tee Rails
			All	60 lb
RAILS	**No. 1**	**No. 2**	**No. 2**	**Under**
Bessemer,Pa. U5	5.275	5.175	5.225	6.25
Ensley,Ala. T2	5.275	5.175	....	6.25
Fairfield,Ala. T2	....	....	....	6.25
Huntington,W.Va. C15	....	....	....	6.25
Gary,Ind. U5	5.275	5.175	5.225	...
IndianaHarbor,Ind. I-2	5.275	5.175	5.225	....
Johnstown,Pa. B2	....	....	...(16)	6.25
Lackawanna,N.Y. B2	5.275	5.175	....	6.25
Minnequa,Colo. C10	5.275	5.175	....	6.75
Steelton,Pa. B2	5.275	5.175	....	....
Williamsport,Pa. S19	....	....	....	6.15

TIE PLATES

Fairfield,Ala. T2	.....6.275
Gary,Ind. U5	.....6.275
Ind.Harbor,Ind. I-2	....6.275
Lackawanna,N.Y. B2	..6.275
Minnequa,Colo. C10	..6.275
Seattle B3	.....6.175
Steelton,Pa. B2	.....6.275
Torrance,Calif. C11	....6.425

JOINT BARS

Bessemer,Pa. U5	.....6.60
Fairfield,Ala. T2	.....6.60
Ind.Harbor,Ind. I-2	....6.60
Joliet,Ill. U5	.....6.60
Lackawanna,N.Y. B2	...6.60
Minnequa,Colo. C10	....6.60
Steelton,Pa. B2	.....6.60

AXLES

Ind.Harbor,Ind. S13	....8.35
Johnstown,Pa. B2	.....8.35

TRACK BOLTS, Untreated

Cleveland R2	.....13.85
KansasCity,Mo. S5	....13.10
Lebanon,Pa. B2	.....13.85
Minnequa,Colo. C10	....13.85
Pittsburgh P14	.....13.10
Seattle B3	.....13.60

SCREW SPIKES

Lebanon,Pa. B2	.....13.60
Pittsburgh P14	.....12.85

STANDARD TRACK SPIKES

Fairfield,Ala. T2	....9.225
Ind.Harbor,Ind. I-2,Y1	9.225
KansasCity,Mo. S5	....8.775
Lebanon,Pa. B2	.....9.225
Minnequa,Colo. C10	....9.225
Pittsburgh J5	.....9.225
Seattle B3	.....9.275
S.Chicago,Ill. R2	.....9.225
Struthers,O. Y1	.....9.225
Youngstown R2	.....9.225

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 5/16 in.; 6.23c; 1 15/16 to 8 in.; inclusive, 6.60c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ¾" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) Plus 1c per 100 lb.
(21) New Haven, Conn. base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.05c, finer than 15 Ga.
(25) Bar mill bands.
(26) Delivered in mill zone,5.685c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝-in.; 7.30c, for widths ⅝-in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b mill; deld. in mill zone or within switching limits, 5.685c.
(43) 9-14½ Ga.
(48) 6-7 Ga.
(49) 3½-in. and smaller rounds; 8.65c, over 3½-in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+5.25	+23.25	1.25	+17.5	3.75	+15	5.25	+13.5	5.25	+13.5	5	+13.75	7.5	+11.25
Ambridge, Pa. N2	+5.25	....	1.25	....	3.75	....	5.25	....	5.25	....	5	....	7.5	....
Lorain, O. N3	+5.25	+23.25	1.25	+17.5	3.75	+15	5.25	+13.5	5.25	+13.5	5	+13.75	7.5	+11.25
Youngstown Y1	+2.75	+20.75	1.25	+17.5	3.75	+15	5.25	+13.5	5.25	+13.5	5	+13.75	7.5	+11.25

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+5.25	+23.25	1.25	+17.5	3.75	+15	5.25	+13.5	5.25	+13.5	5	+13.75	7.5	+11.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	9.25	+10	12.25	+6	15.75	+1.5	18.25	0.25
Alton, Ill. L1	....	....	....	....	....	....	7.25	+12	10.25	+8	13.75	+3.5	16.25	+1.75
Benwood, W. Va. W10	6.5	+24	+4.75	+32.25	+14.75	+42.25	9.25	+10	12.25	+6	15.75	+1.5	18.25	0.25
Butler, Pa. F6	7.5	+23	+3	+30.5	+12.5	+40	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	9.25	+10	12.25	+6	15.75	+1.5	18.25	0.25
Fairless, Pa. N3	....	....	....	....	....	....	7.25	+12	10.25	+8	13.75	+3.5	16.25	+1.75
Fontana, Calif. K1	....	....	....	....	....	....	+3.75	+23	+0.75	+19	2.75	+14.5	5.25	+12.75
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	8.25	+11	11.25	+7	14.75	+2.5	17.25	+0.75
Lorain, O. N3	....	....	....	....	....	....	9.25	+10	12.25	+6	15.75	+1.5	18.25	0.25
Sharon, Pa. S4	7.5	+23	+3	+30.5	+12.5	+40	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	9.25	+10	12.25	+6	15.75	+1.5	18.25	0.25
Sparrows Pt., Md. B2	5.5	+25	+0.5	+32.5	+14.5	+42	7.25	+12	10.25	+8	13.75	+3.5	16.25	+1.75
Wheatland, Pa. W9	7.5	+23	+3	+30.5	+12.5	+40	9.25	+10	12.25	+6	15.75	+1.5	18.25	0.25
Youngstown R2, Y1	....	....	....	....	....	....	9.25	+10	12.25	+6	15.75	+1.5	18.25	0.25

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	18.75	1.25	19.25	1.75	20.75	2.5	20.75	2.5	....	....	....	....
Alton, Ill. L1	16.75	+0.75	17.25	+0.25	18.75	0.5	18.75	0.5	....	....	....	....
Benwood, W. Va. W10	18.75	1.25	19.25	1.75	20.75	2.5	20.75	2.5	10.25	+8.5	10.25	+8.5
Etna, Pa. N2	18.75	1.25	19.25	1.75	20.75	2.5	20.75	2.5	10.25	+8.5	10.25	+8.5
Fairless, Pa. N3	16.75	+0.75	17.25	+0.25	18.75	0.5	18.75	0.5	8.25	+10.5	8.25	+10.5
Fontana, Calif. K1	5.75	+11.75	6.25	+11.25	7.75	+10.5	7.75	+10.5	+2.75	+21.5	+2.75	+21.5
Indiana Harbor, Ind. Y1	17.75	0.25	18.25	0.75	19.75	1.5	19.25	1.5	9.25	+9.5	9.25	+9.5
Lorain, O. N3	18.75	1.25	19.25	1.75	20.75	2.5	20.75	2.5	....	....	....	....
Sharon, Pa. M6	18.75	1.25	19.25	1.75	20.75	2.5	20.75	2.5	....	....	....	....
Sparrows Pt., Md. B2	16.75	+0.75	17.25	+0.25	18.75	0.5	18.75	0.5	8.25	+10.5	8.25	+10.5
Wheatland, Pa. W9	18.75	1.25	19.25	1.75	20.75	2.5	20.75	2.5	10.25	+8.5	10.25	+8.5
Youngstown R2, Y1	18.75	1.25	19.25	1.75	20.75	2.5	20.75	2.5	10.25	+8.5	10.25	+8.5

*Galvanized pipe discounts based on current price of zinc (13.50c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	Rerolling Ingot	Rerolling Slabs	Forging Billets	H.R. Strip	Wire Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	21.25	26.00	....	34.50	....	40.50	42.50	46.75	43.25
202	22.75	29.00	35.00	37.50	39.25	41.25	43.25	47.25	47.25
301	22.25	27.00	35.75	35.75	40.25	42.50	44.50	49.25	45.75
302	24.25	30.25	36.50	39.00	41.00	43.25	45.50	50.00	50.00
302B	24.50	31.50	39.25	44.00	43.25	45.50	47.50	54.75	54.75
303	....	30.75	39.50	....	44.00	46.25	48.00	54.50	54.50
304	26.00	32.00	39.00	42.50	43.75	46.00	48.75	53.25	53.25
304L	....	....	46.50	49.50	51.25	53.50	56.25	60.75	60.75
305	27.50	35.25	40.75	45.75	43.75	46.00	49.25	56.50	56.50
308	29.50	36.75	45.50	48.25	50.75	53.50	58.00	60.50	60.50
309	38.25	47.50	55.50	62.00	61.25	64.50	68.25	77.50	77.50
310	47.75	59.25	75.00	81.00	83.25	87.50	89.25	93.00	93.00
314	....	....	....	....	83.25	....	80.25	....	100.50
316	38.25	47.50	59.75	66.50	66.75	70.25	73.75	78.25	78.25
316L	....	....	67.25	73.00	74.25	77.75	81.25	85.75	85.75
317	46.25	57.75	73.75	84.75	83.00	87.25	90.00	97.00	97.00
321	31.00	38.50	45.25	51.50	50.50	53.25	57.50	63.00	63.00
18-8 CbTa	35.50	44.75	53.50	61.00	59.25	62.25	67.00	76.25	76.25
403	....	....	30.75	....	34.50	36.25	38.75	46.50	46.50
405	18.75	24.50	28.50	34.50	32.50	34.00	36.00	45.00	45.00
410	16.00	20.75	27.25	29.75	31.00	32.50	33.75	38.75	38.75
416	....	....	27.75	....	31.50	33.00	34.75	46.50	46.50
420	....	32.25	33.00	40.25	37.75	39.75	43.50	59.50	59.50
430	16.25	21.00	27.75	30.75	31.50	33.00	34.50	39.25	39.25
430F	....	....	28.25	....	32.00	33.50	35.25	49.75	49.75
431	....	27.75	36.25	....	40.50	42.50	44.25	53.75	53.75
446	....	....	37.75	56.75	42.50	44.75	46.00	67.25	67.25

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Div., H. K. Porter Co. Inc.; Alloy Tube Div., Carpenter Steel Co.; American Steel & Wire Div., U.S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; G. O. Carlson Inc.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Elwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McInnes Steel Co.; McLouth Steel Corp.; Metal Forming Corp.; National-Standard Co.; National Tube Div., U.S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Rotary Electric Steel Co.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Superior Steel Corp.; Superior Tube Co.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co.; Tube Methods Inc.; Ulbrich Stainless Steels; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

Clad Steel

	Plates, Carbon Base 5%	10%	15%	20%	Sheets, Carbon Base 20%
Stainless					
302	....	....	....	....	35.50
304	33.15	36.20	40.30	44.50	37.75
304-L	35.40	38.80	43.15	47.65	....
316	38.35	41.60	45.90	50.15	55.50
316-L	43.55	47.60	52.70	57.85	....
316-Cb	43.85	48.10	53.40	58.75	....
321	34.90	37.95	42.10	46.40	44.75
347	37.05	41.25	46.45	51.70	54.25
405	27.55	29.20	33.15	37.05	....
410	27.00	28.70	32.65	36.55	....
430	27.00	28.70	32.65	36.55	....
Inconel	47.28	57.90	68.50	79.20	....
Nickel	40.00	50.30	60.65	71.05	....
Nickel, Low Carbon	40.30	50.95	61.65	72.50	....
Monel	41.70	51.90	62.15	72.40	....
Copper*	....	....	....	....	46.00

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
Copper*	33.00	39.85

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.290	Cr Hot Work	0.45-0.495
Extra Carbon	0.345	W-Cr Hot Work	0.43-0.475
Special Carbon	0.41-0.45	V-Cr Hot Work	0.460
Oil Hardening	0.450	Hi-Carbon-Cr	0.830

Grade by Analysis (%) W	Cr	V	Co	Mo	$ per lb
20.25	4.25	1.6	12.25	....	4.170
18.25	4.25	1	4.75	....	2.385
18	4	2	9	....	2.755
18	4	2	....	....	1.845
18	4	1	....	....	1.680
9	3.5	..	....	....	1.275
13.5	4	3	....	....	1.945
13.75	3.75	2	5	....	2.325
6.4	4.5	1.9	....	5	1.185
6	4	3	....	6	1.430
1.5	4	1	....	8.5	1.040

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

Birmingham District	Basic	No. 2 Foundry	Malle-able	Besse-mer
AlabamaCity,Ala. R2	58.50	59.00	....	....
Birmingham R2	58.50	59.00‡	....	....
Birmingham U6	....	59.00‡	63.00	....
Woodward,Ala. W15	58.50**	59.00‡	63.00	....
Cincinnati, deld.	....	66.70	....	....
Buffalo District				
Buffalo H1, R2	64.50	65.00	65.50	66.00
Tonawanda,N.Y. W12	64.50	65.00	65.50	66.00
N.Tonawanda,N.Y. T9	....	65.00	65.50	66.00
Boston, deld.	75.79	76.29	76.79	....
Rochester,N.Y., deld.	67.52	68.02	68.52	....
Syracuse,N.Y., deld.	68.62	69.12	69.62	....
Chicago District				
Chicago I-3	64.50	65.00	65.00	65.50
S.Chicago,Ill. R2	64.50	....	65.00	....
S.Chicago,Ill. Y1	64.50	65.00	65.00	....
S.Chicago,Ill. W14	64.50	....	65.00	65.50
Milwaukee, deld.	66.96	67.46	67.46	67.96
Muskegon,Mich., deld.	....	78.83	78.83	....
Cleveland District				
Cleveland R2, A7	64.50	65.00	65.00	65.50
Akron,O., deld.	67.62	68.12	68.12	68.62
Mid-Atlantic District				
Birdsboro,Pa. B10	66.50	67.00	67.50	68.00
Chester,Pa. P4	66.50	67.00	67.50	....
Swedeland,Pa. A3	66.50	67.00	67.50	68.00
New York, deld.	....	73.20	73.70	....
Newark,N.J., deld.	70.52	71.02	71.52	72.02
Philadelphia, deld.	68.38	68.88	69.38	69.88
Troy,N.Y. R2	66.50	67.00	67.50	68.00
Pittsburgh District				
NevilleIsland,Pa. P6	64.50	65.00	65.00	65.50
Pittsburgh (N&S sides), Aliquippa, deld.	....	66.45	66.45	66.98
McKeesRocks,Pa., deld.	....	66.10	66.10	66.63
Lawrenceville, Homestead, Wilmerding,Monaca,Pa., deld	....	66.76	66.76	67.29
Verona,Trafford,Pa., deld.	66.79	67.32	67.32	67.85
Brackenridge,Pa., deld.	67.10	67.60	67.60	68.13
Midland,Pa. C18	64.50	....	....	....

Youngstown District	Basic	No. 2 Foundry	Malle-able	Besse-mer
Hubbard,O. Y1	....	....	65.00	....
Sharpsville,Pa. S6	64.50	....	65.00	65.50
Youngstown Y1	....	....	65.00	65.50
Mansfield,O., deld.	69.40	....	69.90	70.40
Duluth I-3	64.50	65.00	65.00	65.50
Erie,Pa. I-3	64.50	65.00	65.00	65.50
Everett,Mass. E1	64.50	65.00	65.50	....
Fontana,Calif. K1	70.50	71.00	....	....
Geneva,Utah C11	64.50	65.00	....	....
GraniteCity,Ill. G4	66.40	66.90	67.40	....
Ironton,Utah C11	64.50	65.00	....	....
Minnequa,Colo. C10	66.50	67.00	67.50	....
Rockwood,Tenn. T3	....	59.00‡	63.00	....
Toledo,O. I-3	64.50	65.00	65.00	65.50
Cincinnati, deld.	71.04	71.54	....	....

**Phos. 0.70-0.90%; Phos. 0.30-0.60%, $59.50.
‡Phos. 0.70-0.90%; Phos. 0.30-0.50%, $60.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.
Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.
Nickel: Under 0.50% no extras; 0.50-0.74%, inclusive, add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,O. I-3, J1	77.25
Buffalo H1	78.50

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity, Ky. P15	$105.50
NiagaraFalls,N.Y. P15	105.50
Keokuk,Iowa, Open-hearth & Fdry, freight allowed K2	110.00
Keokuk, H.O. & Fdry, 12½ lb piglets, 16% Si, frgt allowed K2	113.00

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$78.50
Rockwood,Tenn. T3 (Phos. 0.035% max)	78.50
Troy,N.Y. R2 (Phos. 0.035% max)	72.50
Philadelphia, deld.	80.26
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	69.50
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	69.50
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	69.50
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	69.50

Warehouse Steel Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Houston, Seattle no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††		Carbon	Floor
Atlanta	8.17§	9.37§	9.83§	....	8.21	8.45	10.23	....	8.59	8.55	10.51
Baltimore	7.88	8.98	9.12	....	8.36	8.53	9.13[3]	14.68	8.75	8.26	9.76
Birmingham	7.80	9.00	9.52	....	7.82	8.07	10.12	....	8.20	8.16	10.31
Boston	8.84	9.88	11.06	60.42	8.89	9.07	....	14.69	9.10	9.18	10.68
Buffalo	7.85	9.00	10.75	....	8.05	8.25	8.70	14.50	8.50	8.50	10.05
Chattanooga	7.99	9.24	9.10	....	8.00	8.24	10.04	....	8.44	8.40	10.26
Chicago	7.80	9.00	9.70	53.25	7.82	8.07	8.35	14.15	8.20	8.16	9.49
Cincinnati	7.94	9.05	9.75	50.00	8.14	8.38	8.84	14.46	8.74	8.52	9.78
Cleveland	7.78	8.98	9.60	53.43	7.92	8.16	8.60	14.24	8.57	8.39	9.72
Denver	9.55	11.09	12.41	....	9.70	9.75	10.54	18.89	9.60	9.50	11.15
Detroit	8.03	9.25	10.05	59.50	8.17	8.37	8.70	14.41	8.74	8.51	9.74
Erie, Pa.	7.85	9.00	9.60[10]	....	7.95	8.20	8.70[10]	....	8.50	8.35	9.75
Houston	8.70	9.65	10.99	....	8.80	9.15	10.55	15.00	8.90	8.60	10.10
Jackson, Miss.	8.09	9.34	9.79	....	8.16	8.41	10.23	....	8.54	8.50	10.34
Los Angeles	9.10	10.80	11.65	57.45	9.15	9.05	12.10	15.50	9.15	9.65	11.80
Milwaukee	7.93	9.13	9.83	....	7.95	8.20	8.58	14.28	8.41	8.29	9.62
Moline, Ill.	8.05	9.25	10.05	....	8.13	8.26	8.70	....	7.78	8.36	...
New York	8.45	9.66	10.23	60.20	8.90	9.01	....	14.59	8.91	9.01	10.31
Norfolk, Va.	8.05	...	....	....	8.55	8.60	10.80	....	8.95	8.45	9.95
Philadelphia	8.15	9.07	10.29	50.69	8.71	8.71	9.31	14.51	8.70	8.68	9.70
Pittsburgh	7.78	8.99	10.05	50.00	8.07	8.07	8.35	14.15	8.20	8.16	9.49
Portland, Oreg.	8.90	9.65	11.40	55.20	11.05‡‡	9.45	13.55	14.60	9.35	12.20§§	11.60
Richmond, Va.	8.00	...	10.14	....	8.55	8.40	10.00	....	8.95	8.40	9.90
St. Louis	8.14	9.34	10.06	73.38	8.43	8.28	8.96	14.41	8.67	8.52	9.86
St. Paul	8.29	9.49	10.31	....	8.43	8.52	9.21	....	8.94	8.90	9.87
San Francisco	8.95	10.30	10.80	53.45	8.95	9.05	12.30	15.50	9.05	9.20	11.45
Seattle	9.55	10.70	11.65	55.20	9.55	9.50	13.40	15.85	9.35	9.30	11.30
Spokane, Wash.	9.55	10.70	11.65	....	9.55	9.55	13.45	16.65	9.35	9.30	11.75
Washington	8.48	9.58	....	....	9.06	9.13	9.73	....	9.35	8.86	10.36

*Prices do not include gage extras; †prices include gage and coating extras (based on 12.50c zinc at Los Angeles and 13.50c at other points), except in Birmingham (coating extra excluded); ‡includes 35-cent bar quality extras; §42 in. and under; **½-in. and heavier; ††as annealed; ‡‡over 4 in.; §§over 3 in.

Base quantities, 2000 to 4999 lb except as noted; cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb, and in Los Angeles, 6000 lb and over; stainless sheets, 8000 lb except in Chicago, New York and Boston, 10 000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb; [3]—400 to 999 lb; [5]—1000 to 1999 lb; [8]—2000 to 3999 lb; [10]—2000 lb and over.

Refractories

(Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beach Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., $128; Salina, Pa., $133; Niles, O., $138; Cutler, Utah, $148.

Super-Duty: Ironton, O., Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Pa., New Savage, Md., St. Louis, $165; Stevens Pottery, Ga., $175.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, O., Hawstone, Pa., $140; Warren, Niles, Windham, O., Hays, Latrobe, Morrisville, Pa., $145; E. Chicago, Ind., Joliet, Rockdale, Ill., $150; Lehigh, Utah, $165; Los Angeles, $170.

Super-Duty: Hays, Sproul, Hawstone, Pa., Niles, Warren, Windham, O., Leslie, Md., Athens, Tex., $157; Morrisville, Latrobe, Pa., $160; Curtner, Calif., $182.

Semisilica Brick (per 1000)

Clearfield, Pa., $145; Woodbridge, N. J., $128; Philadelphia, $130.

Ladle Brick (per 1000)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, O., $96; Clearfield, Pa., Portsmouth, O., $98.

High-Alumina Brick (per 1000)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $220; Danville, Ill., $223; Philadelphia, Clearfield, Pa., $230.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $275; Danville, Ill., $278; Philadelphia, Clearfield, Pa., $285.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $315; Danville, Ill., $318; Philadelphia, Clearfield, Pa., $325.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $177; Clearfield, Pa., $189.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $292; Clearfield, Pa., $311.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $221; Clearfield, Pa., $236.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, O., Gibsonburg, Narlo, O., $16; Thornton, McCook, Ill., $16.35; Dolly Siding, Bonne Terre, Mo., $15.

Magnesite (per net ton)

Domestic, dead-burned, bulk ½-in. grains with fines; Chewelah, Wash., Luning, Nev., $43; ⅝-in. grains with fines: Baltimore, $69.40.

Fluorspar

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $38-39; 70%, $35-36; 60%, $31-32. Imported, net tons, f.o.b. cars point of entry, duty paid, metallurgical grade: European, $34; Mexican, $26.50.

Ores

Lake Superior Iron Ore

(Prices effective for the 1957 shipping season, gross tons, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old range bessemer	11.85
Old range nonbessemer	11.70
Open-hearth lump	12.70
High phos.	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic 62-64% concentrates	25.00-27.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	27.00-27.50
N. African hematite (spot)	nom. 24.00-25.00
Brazilian iron ore, 68-69%	35.00-36.00

Tungsten Ore

Net ton unit, before duty

Foreign, wolframite, good commercial quality	$24.00-26.00
Domestic, concentrates, mine	55.00

Manganese Ore

Mn 46-48%, Indian (export tax included), $1.60-1.70 per long ton unit, c.i.f. U.S. ports, duty for buyer's account; other than Indian, $1.45-1.50; contracts by negotiation.

Chrome Ore

Gross ton f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian

48% 3:1	$54.00-57.00
48% 2.8:1	51.00-54.00
48% no ratio	43.00-45.00

South African Transvaal

48% no ratio	$37.50-39.00
44% no ratio	26.00-27.00

Turkish

48% 3:1	$60.00-63.00

Domestic

Rail nearest seller

18% 3:1	$39.00

Molybdenum

Sulphide concentrate, per lb of Mo content, mines, unpacked	$1.18

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard	
55-60%	$3.20-3.65
60-65%	3.60-3.80

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge iron:	
Swedish, c.i.f. Camden, N.J., c.l. in bags	8.50
Domestic:	
F.o.b., Johnstown, Pa., Niagara Falls, N. Y., in bags	9.50
F.o.b., Riverton, N. J., in bags	8.50
Canadian, f.o.b. shipping point	9.50
Electrolytic iron:	
Melting stock, 99.9% Fe, irregular fragments of ⅛ in. x 1.3 in.	26.00
Annealed, 99.5% Fe.	36.50
Unannealed (99+ % Fe)	34.00
Unannealed (99+ % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh)	29.00
Carbonyl Iron:	
98.1-99.9%, 3 to 20 microns, depending on grade, 99.00-290.00, in standard 200-lb containers; all minus 200 mesh.	
Aluminum:	
Atomized, 500 lb drum, frght allowed	
Carlots	38.20
Ton lots	40.20
Antimony, 500 lb lots	32.00*
Brass, 5000-lb lots	35.80-45.00†
Bronze, 5000-lb lots	44.70-59.00†
Copper:	
Electrolytic	14.25*
Reduced	14.25*
Lead	7.50*
Manganese:	
Minus 35 mesh	64.00
Minus 100 mesh	70.00
Minus 200 mesh	75.00
Nickel, unannealed	$1.065
Nickel-Silver, 5000-lb lots	54.70-66.40†
Phosphor-Copper, 5000-lb lots	64.00
Copper (atomized) 5000-lb lots	46.50-54.00‡
Silicon	47.50
Solder	7.00*
Stainless Steel, 304	$1.08
Stainless Steel, 316	$1.44
Tin	14.50*
Zinc, 5000-lb lots	19.75-33.00‡
Tungsten:	Dollars
Melting grade, 99%	
60 to 2000 mesh:	
1000 lb and over	4.20
Less than 1000 lb.	4.35
Chromium, electrolytic 99.8% Cr min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §70% Cu, 20% Zn, 10% Ni. **64% Cu, 18% Zn, 18% Ni.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

——Inches—— Diam.	Length	Per 100 lb
2	24	$57.75
2½	30	37.25
3	40	35.25
4	40	33.25
5⅛	40	33.00
6	60	30.00
7	60	26.75
8, 9, 10	60	26.50
12	72	25.50
14	60	25.50
16	72	24.50
17	60	25.50
18	72	24.50
20	72	24.00
24	84	24.75

CARBON

8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
14	72	11.95
17	60	11.85
17	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, furnace	$14.75-15.75
Connellsville, foundry	17.50-18.50

Oven Foundry Coke

Birmingham, ovens	$28.85
Cincinnati, deld.	33.78
Buffalo, ovens	30.50
Camden, N. J., ovens	29.50
Detroit, ovens	30.50
Pontiac, deld.	32.25
Saginaw, deld.	33.83
Erie, Pa., ovens	30.50
Everett, Mass., ovens	
New England, deld.	31.55*
Indianapolis, ovens	29.75
Ironton, O., ovens	29.00
Cincinnati, deld.	29.27
Kearny, N. J., ovens	29.75
Milwaukee, ovens	30.50
Painesville, O., ovens	30.50
Cleveland, deld.	32.69
Philadelphia, ovens	29.50
St. Louis, ovens	31.50
Neville Island (Pittsburgh), Pa., ovens	29.25
St. Paul, ovens	29.75
Chicago, deld.	33.14
Swedeland, Pa., ovens	29.50
Terre Haute, Ind., ovens	29.75

*Or within $4.55 freight zone from works.

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$7.15	$7.15	$7.15	$7.40
Bar Size Angles	7.11	7.11	7.11	7.26
Structural Angles	7.30	7.30	7.30	7.60
I-Beams	7.50	7.50	7.50	7.75
Channels	7.70	7.70	7.70	7.95
Plates (basic bessemer)	9.00	9.00	9.00	9.30
Sheets, H.R.	8.55	8.55	8.55	8.85
Sheets, C.R. (drawing quality)	8.95	8.95	8.95	9.35
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	27.17	27.17	27.17	27.64
Barbed Wire (†)	6.90	6.90	6.90	7.35
Merchant Bars	7.15	7.15	7.15	7.50
Hot-Rolled Bands	7.25	7.25	7.25	7.65
Wire Rods, Thomas Commercial No. 5	6.38	6.38	6.38	6.78
Wire Rods, O-H Cold Heading Quality No. 5	6.72	6.72	6.72	7.12
Bright Common Wire Nails (‡)	8.45	8.45	8.45	8.57

Oil Country Pipe: Mills withdrawn temporarily.

†Per 82-lb, net, reel. ‡Per 100-lb kegs, 20d nails and heavier.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzene	36.00
Toluene, one deg.	32.00-34.00
Industrial xylene	32.00-35.00

Per ton, bulk, ovens

Ammonium sulfate	$32.00

Cents per pound, producing point

Phenol: Grade 1, 15.00; Grade 2-3, 14.50; Grade 4, 16.50; Grade 5, 15.25.	

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Pa. 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx). Base price per net ton; $255, Johnstown, Duquesne, Sheridan, Pa., Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74% respectively.

(Mn 79-81%). Lump $263 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max, 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.50% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2% max). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, 33c; 2000 lb to min carload, 35c; 500 lb to 1999 lb, 37c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or to any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va., Ashtabula, O., Marietta, O., Sheffield, Ala., Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $200 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract $225 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk, 27.75c per lb of contained Cr; c.l. packed 29.3c, ton lot 31.05c; less ton 32.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-71%). Contract, carload, lump, bulk, C 0.025% max (Simplex) 34.75c per lb contained Cr, 0.02% max 41.5c, 0.03% max 41c, 0.06% max 39.5c, 0.1% max 39c, 0.15% max 38.75c, 0.2% max 38.5c, 0.5% max 38.25c, 1.0% max 37.5c, 1.5% max 37.35c, 2.0% max 37.25c. Ton lot, add 3.4c, less ton add 5.1c. Carload packed add 1.75c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 29.05c per lb contained Cr. Packed, c.l. 30.65c, ton 32.45c, less ton 33.95c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8 M x D, 20.85c, per lb of alloy, ton lot 22.10c; less ton lot 23.3c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome-Silicon: (Cr 39-41%, Si 42-49%, C 0.05% max). Contract, carload, lump, 4" x down and 2" x down, bulk, 41.35c per lb of contained Cr; 1" x down, bulk 42.35c. Delivered.

Chromium Metal, Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about ⅛" thick) $1.29 per lb, ton lot $1.31, less ton lot $1.33. Delivered. Spot, add 5c

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si. Packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 13c per lb of contained Si. Packed c.l. 15.5c, ton lot 16.95c, less ton 18.6c, f.o.b. Alloy, W. Va., Ashtabula, Marietta, O., Sheffield, Ala., and Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.25c per pound contained silicon. Packed, c.l. 17.25c, ton lot, 19.05c; less ton 20.4c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.4c per lb of contained Si. Packed, c.l. 18.30c, ton lot 19.95c, less ton 21.2c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 19.5c per lb of contained Si. Packed, c.l. 21.15c, ton lot 22.55c, less ton 23.6c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 0.75% max Fe, 0.07% max Ca). C.l. lump, bulk, 21.5c per lb of Si. Packed, c.l. 23.15c, ton lot 24.45c, less ton 25.45c. Add 0.5c for max 0.03% Ca grade. Deduct 0.5c for max 2% Fe grade analyzing min 96.5% Si. Spot, add 0.25c.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 10.65c per lb of alloy, ton lot, packed, 11.8c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Bortam: (B 1.5%-1.9%). Ton lot, 45c per lb; less than ton lot, 50c per lb.

Carbortam: (B 1 to 2%). Contract, lump, carload 9.50c per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3¾ lb each and containing 2 lb of Cr). Contract, carload, bulk, 19c per lb of briquet, carload packed in box pallets 19.2c, in bags 20.1c; 3000 lb to c.l. in box pallets 20.4c; 2000 lb to c.l. in bags, 21.3c; less than 2000 lb in bags 22.2c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l. bags, 17.2c, less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ⅓ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets, 15.3c; bags 16.3c, 3000 lb to c.l., pallets, 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si). Contract, carload, bulk, 7.7c per lb of briquet, packed, pallets, 7.9c; bags 8.9c; 3000 lb to c.l., pallets 9.5c; 2000 lb to c.l. bags 10.5c; less ton 11.4c. Delivered. Spot, add 0.25c. (Small size—weighing approx 2½ lb and containing 1 lb of Si). Carload, bulk 7.85c. Packed, pallets 8.05c; bags 9.05c; 3000 lb to c.l. pallets 9.65c; 2000 lb to c.l. bags 10.65c; less ton 11.55c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.41 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 5000 lb W or more $3.15 per lb of contained W; 2000 lb W to 5000 lb W, $3.25; less than 2000 lb W, $3.37. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Contract, ton lot. 2" x D, $6.90 per lb of contained Cb. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx, Ta 20% approx., and Cb plus Ta 60% min, C 0.30% max). Ton lot 2" x D, $4.95 per lb of contained Cb plus Ta, delivered; less ton lot $5.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 19c per lb of alloy, ton lot 20.15c, less ton 21.4c. Delivered. Spot, add 0.25c.

Graphidox No. 5: (Si 48-52%, Ca 5.7%, Ti 9-11%). C.l. packed, 19c per lb of alloy, ton lot 20.15c; less ton lot 21.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.1c per lb of alloy; ton lot 19.55c; less ton lot 20.8c, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal. Fe). Lump, carload, bulk 18.50c. Packed c.l. 19.50c, 2000 lb to c.l. 20.50c, less than 2000 lb 21c per lb of alloy. Delivered.

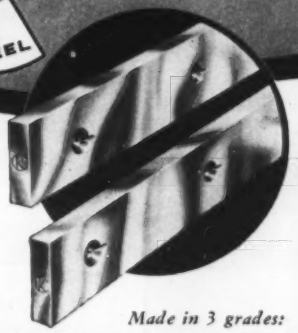
Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carload, f.o.b. sellers' works. Mt. Pleasant, Siglo, Tenn., $90 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa., $1.65 in all sizes except powdered which is $1.74.

Technical Molybdic-Oxide: Per lb contained Mo, in cans, $1.39; in bags, $1.38, f.o.b. Langeloth and Washington, Pa.

"CLEVELAND"
SQUARING SHEAR BLADES

SOLID TOOL STEEL



Made in 3 grades:
"Peerless" (high carbon high chrome)
"Century" (high alloy)
"Standard" (low alloy)

Used by EVERY manufacturer of squaring shears as original equipment. Because they are ground to the closest tolerances in the knife industry — "CLEVELAND" shear blades insure maximum cutting life . . .

We make a complete line of knives and shear blades for every industrial need. We have learned a lot about YOUR problems in the past 40 years — ask us.

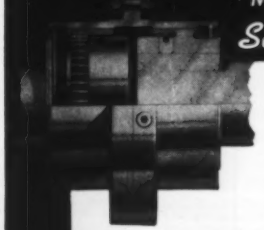
Manufactured and sold by:

THE HILL ACME COMPANY
CLEVELAND KNIFE DIVISION
1201 West 65th St. • Cleveland 2, Ohio

HOW CAN YOU AFFORD ORDINARY GEAR TYPE COUPLINGS WHEN

AJAX *New* **3-Degree DIHEDRALS**

HANDLE 3-DEGREE MISALIGNMENT at the *Same Low Price?*



Cut-away view showing arrangement of specially designed gears and location of lubrication seals.

With ability to handle angular and offset misalignment . . . with minimum backlash . . . with perfected lubricant sealing . . . with long life,—AJAX Dihedral Couplings have made ordinary couplings obsolete.

And now AJAX adds this new 3-D Self-aligning Dihedral Coupling at prices competitive with ordinary gear type couplings.

AJAX 3-D Dihedral Couplings will handle misalignment up to three degrees between the driving and driven shafts of direct connected machines. AJAX patented Dihedral tooth design makes it possible to have close tooth clearance with no dependence on backlash for handling misalignment. AJAX 3-D couplings are designed for NEMA motor shafts using standard keys.

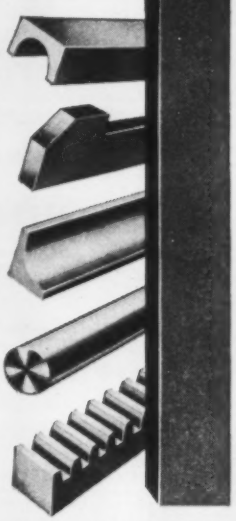
AJAX FLEXIBLE COUPLING CO. INC.
WESTFIELD, N.Y.

A quality name SINCE 1892

It means much to critical buyers:

- **metallurgical quality control**
- **close-limit precision-production**
- **fast shipments direct from plant**
- **district warehouse distributors**

Moltrup
COLD DRAWN *Steel*



Cut costs by ordering exact shapes needed — drawn to the exceptionally close tolerances that have made MOLTRUP the quality name in steel for over 65 years. All standard shapes — any special shape . . . carbon — alloy — leaded steels . . . close-tolerance key stock.

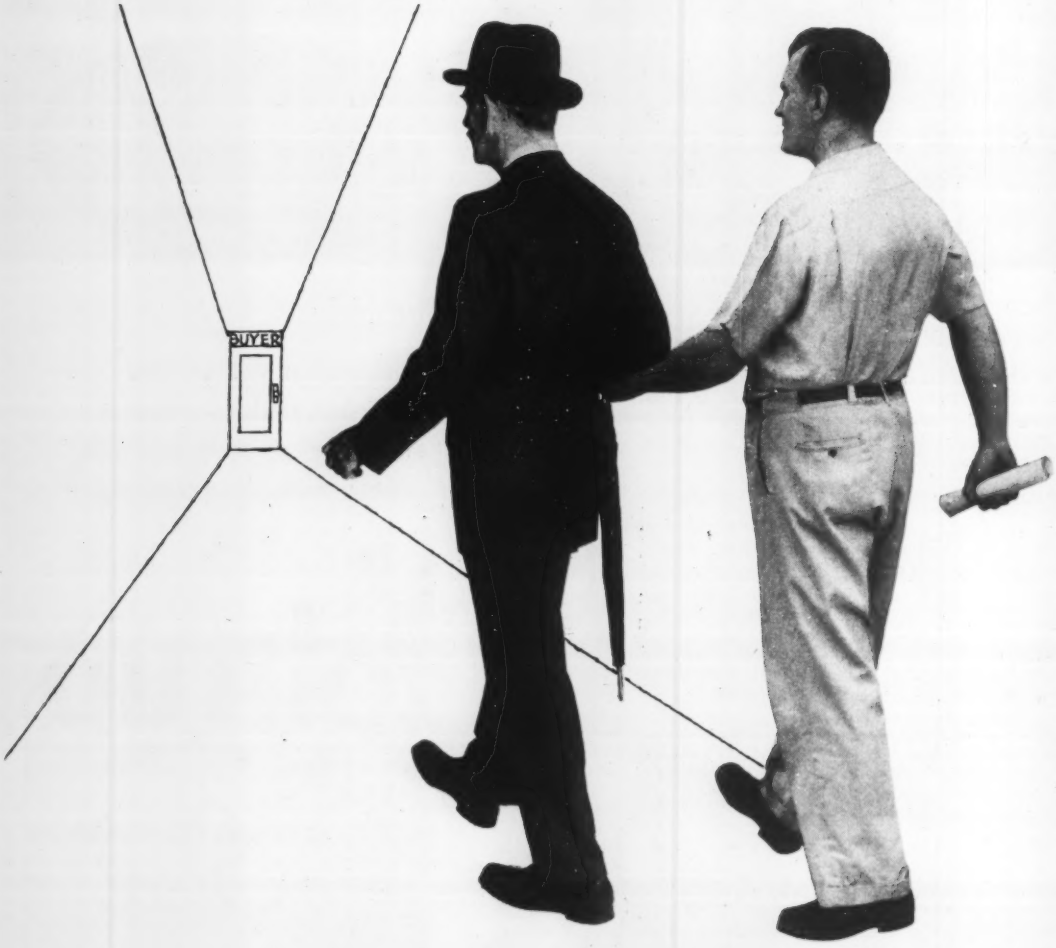
Moltrup products include turned and polished shafting . . . free cutting screw stock . . . machine rack . . . all types of machine keys and pins . . . polished steel plates . . . foundry pattern, core and bottom plates.

We invite consultation on your problems.
Try us for emergency needs.
Phone: Beaver Falls 730
(Consult telephone directory in cities listed)

Moltrup Steel Products Co.
BEAVER FALLS, PA.

Pittsburgh, Pa. Bala Cynwyd, Pa. Erie, Pa. Chicago, Ill.
Detroit, Mich. New York, N. Y. Syracuse, N. Y. Cincinnati, O.
Cleveland, O. Los Angeles, Calif.

51



Your Wickwire Rope Distributor and our closer operator ...ready to help you

This closer operator—running a machine which forms our rope—is with your Wickwire Rope Distributor every time he makes a call.

True, he's physically in the mill, where he's carefully conducting this final fabricating operation. But, whenever your Wickwire Distributor makes a call, he has the full assurance that every foot of Wickwire Rope has been carefully assembled by skilled craftsmen . . . and that it will give you long, trouble-free service on your job.

It's just one more reason why your Wickwire Distributor knows he's got top-quality wire rope, slings and strand to sell . . . and that these products will serve you well.

4085

A PRODUCT OF THE COLORADO FUEL AND IRON CORPORATION

Scrap Prices Are Still Declining

Market slump extended with steel mills limiting purchases. Index on prime steel grades drops to $48.83, off another $1.50. End of downtrend not in sight

Scrap Prices, Page 168

Pittsburgh—A mill in this area bought No. 2 bundles last week at $38 per ton. It also purchased bundles for delivery to a neighboring mill point for a higher price, but the effect of these purchases was to lower quotations on principal grades $2 to $3. In the absence of buying by major mills, No. 1 heavy melting declined to $49, off $2. No. 2 heavy melting is $2 weaker, while No. 2 bundles are off $3. The downtrend continues in stainless steel scrap. Purchases of 18-8 bundles and solids are being made below $450 per ton.

Cleveland—The scrap market is at a standstill here and in the Valley. Steel mills are not buying, though they are taking in tonnage on old orders. Some foundries are buying cast iron grades, which are stronger than the steel grades. In the absence of representative mill purchases, and based on brokers' views, prices on the steel and blast furnace grades are off another $2 a ton, with No. 1 heavy melting $43-$44 here, and $46-$47 in the Valley. Hope for an April pickup in steelmaking operations with an accompanying rise in demand for scrap is not strong among scrap men.

Chicago—Prices took another downward turn last week. They carried open hearth and railroad grades down $1 to $2 a ton, and blast furnace grades $5. Foundry items continued unchanged.

The whole market is weak, with the steel mills not too anxious to buy. It indicates further settling of the market can be expected.

No. 1 heavy melting of industrial origin was purchased by mill at $48, and No. 1 railroad heavy melting at $50. Machine shop turnings sold at $29. A slowly declining steel rate, both here and in the country generally, cast a bearish shadow on scrap.

Philadelphia—Scrap prices continue to ease, with consumers buying sparingly and drawing on inventories to a greater extent than usual. Prime grades of open-hearth material are nominally $52-$54, delivered, with little business going to test the market. No. 2 heavy melting has been purchased at $44, delivered, and No. 2 bundles at $40-$41. Couplers, springs and wheels are lower at $63, delivered, and rail crops at $71-$72. No. 2 cupola cast is nominally lower at $48-$49, delivered; heavy breakable at $56; and drop broken machinery at $55-$56. Malleable is nominally unchanged.

New York—Local brokers have reduced buying prices on prime grades of open-hearth scrap $1 a ton, now offering $46-$47, and on No. 2 bundles $35-$36. They also have dropped prices on machine shop turnings $1, now quoting $29-$30, and on low phos structurals and plate $3, now offering $52-$53.

Boston — Steelmaking scrap prices are off sharply, brokers paying no higher than $44, shipping point, for the bulk of No. 1 heavy melting bought in this market. Bundles are down $2 a ton. Borings and turnings also are lower. Cupola cast prices are easier. Lower prices are based on the small volume of new buying.

Cincinnati—The downward drift continues in scrap. Prices eased another 50 cents a ton last week, bringing No. 1 heavy melting to $44-$45, brokers' buying price. No new buying is reported.

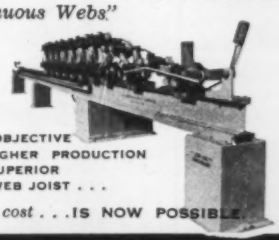
Detroit—Brokers' buying prices have slipped again, anticipating lower offerings on automotive lists at the end of the month. One reason for the decline is the number of furnaces on the inactive list in this area. Some brokers feel that demand from Hamilton, Ont., will help sustain the local market.

Birmingham—Weakness continues in a lethargic scrap market here. There has been no buying of open-hearth grades since an Atlanta mill purchased No. 2 heavy melting several weeks ago. A Birmingham electric furnace operator dropped its buying price on electric furnace scrap $2 a ton. Some specialty and railroad items are off slightly. The cast market is down again after one customer filled needs at $1 increase and No. 1 cast recovered to $51, delivered. There is some buying for export, but it is spotty, mostly in small quantities to complete cargoes.

Los Angeles—Local area steel mills are reported lowering their scrap buying prices as a test of

(*Please turn to page* 173)

Mr. Fabricator! WRITE FOR FREE BROCHURE.
"Continuous Webs"



YOUR OBJECTIVE FOR HIGHER PRODUCTION OF A SUPERIOR OPEN WEB JOIST . . .
at less cost . . . IS NOW POSSIBLE.
EIDAL MFG. CO. P. O. Box 1299 Albuquerque, New Mexico

Here's Just 3 Reasons Why So Many Welders Have Switched

- Wrap around Glass Fibre Tip Insulation—30% *more* heat resistance than any other make!
- Brilliant Red Tips and Trigger—Bright Yellow Handle—all Glass Fibre, an outstanding Safety Feature!
- Body completely insulated—no bare spots!

HI-AMP®
ELECTRODE HOLDERS
are the most economical to buy and maintain too!

Will see you at A. W. S. in Philadelphia April 9-11, our Booth 107

LENCO, INC.
(Formerly Wagner Mfg. Co. Inc.)
JACKSON, MISSOURI

Weld with HI-AMP

Iron and Steel Scrap

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL, Mar. 20, 1957. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Mar. 20	$48.83
Mar. 13	50.33
Feb. Avg.	53.41
Mar. 1956	50.21
Mar. 1952	43.00

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	*48.00-49.00*
No. 2 heavy melting	*41.00-42.00*
No. 1 bundles	*48.00-49.00*
No. 2 bundles	*37.00-38.00*
No. 1 busheling	*48.00-49.00*
Machine shop turnings	36.00-37.00
Mixed borings, turnings	36.00-37.00
Short shovel turnings	40.00-41.00
Cast iron borings	40.00-41.00
Cut structurals, 3 ft. lengths	54.00-55.00
Cut structurals, 2 ft. and under	56.00-57.00
Heavy turnings	45.00-46.00
Punchings & plate scrap	54.00-55.00
Electric furnace bundles	54.00-55.00

Cast Iron Grades

No. 1 cupola	*48.00-49.00*
Heavy breakable cast	*46.00-47.00*
Unstripped motor blocks	38.00-39.00
No. 1 machinery cast	57.00-58.00

Railroad Scrap

No. 1 R.R. heavy melt	*54.00-55.00*
Rails, 2 ft and under	70.00-71.00
Rails, 18 in. and under	71.00-72.00
Rails, random lengths	*67.00-68.00*
Railroad specialties	67.00-68.00

Stainless Steel Scrap

18-8 bundles & solids	*420.00-450.00*
18-8 turnings	*320.00-350.00*
430 bundles & solids	*90.00-100.00*
430 turnings	*65.00-70.00*

CLEVELAND

No. 1 heavy melting	*43.00-44.00*
No. 2 heavy melting	*40.00-41.00*
No. 1 bundles	*43.00-44.00*
No. 2 bundles	*33.00-34.00*
No. 1 busheling	*43.00-44.00*
Machine shop turnings	*27.00-28.00*
Mixed borings, turnings	*30.00-31.00*
Short shovel turnings	*30.00-31.00*
Cast iron borings	*30.00-31.00*
Cut foundry steel	*49.00-50.00*
Cut structurals, plates 2 ft and under	*53.00-54.00*
Alloy free, short shovel turnings	*34.00-35.00*
Electric furnace bundles	*46.00-47.00*

Cast Iron Grades

No. 1 cupola	52.00-53.00
Charging box cast	41.00-42.00
Heavy breakable cast	41.00-42.00
Stove plate	48.00-49.00
Unstripped motor blocks	34.00-35.00
Brake shoes	41.00-42.00
Clean auto cast	51.00-52.00
Burnt cast	39.00-40.00
Drop broken machinery	54.00-55.00

Railroad Scrap

No. 1 R.R. heavy melt.	49.00-50.00
R.R. malleable	57.00-58.00
Rails, 2 ft and under	70.00-71.00
Rails, 18 in. and under	71.00-72.00
Rails, random lengths	65.00-66.00
Cast steel	59.00-60.00
Railroad specialties	63.00-64.00
Uncut tires	62.00-63.00
Angles, splice bars	62.00-63.00
Rails, rerolling	71.00-72.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	*400.00-425.00*
18-8 turnings	*240.00-250.00*
430 clips, bundles, solids	*75.00-80.00*
430 turnings	*25.00-30.00*

YOUNGSTOWN

No. 1 heavy melting	*46.00-47.00*
No. 2 heavy melting	*43.00-44.00*
No. 1 bundles	*46.00-47.00*
No. 2 bundles	*38.00-39.00*
No. 1 busheling	*46.00-47.00*
Machine shop turnings	*26.00-27.00*
Short shovel turnings	*30.00-31.00*
Cast iron borings	*30.00-31.00*
Low phos.	*48.00-49.00*
Electric furnace bundles	*48.00-49.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*50.00-51.00*

CHICAGO

No. 1 hvy melt, indus.	*47.00-48.00*
No. 1 hvy melt, dealer	*42.00-43.00*
No. 2 heavy melting	*39.00-40.00*
No. 1 factory bundles	*49.00-50.00*
No. 1 dealer bundles	*44.00-45.00*
No. 2 bundles	*37.00-38.00*
No. 1 busheling, indus.	*47.00-48.00*
No. 1 busheling, dealer	*42.00-43.00*
Machine shop turnings	*28.00-29.00*
Mixed borings, turnings	*30.00-31.00*
Short shovel turnings	*30.00-31.00*
Cast iron borings	*30.00-31.00*
Cut structurals, 3 ft	51.00-52.00
Punchings & plate scrap	52.00-53.00

Cast Iron Grades

No. 1 cupola	42.00-43.00
Stove plate	41.00-42.00
Unstripped motor blocks	33.00-34.00
Clean auto cast	49.00-50.00
Drop broken machinery	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt.	*49.00-50.00*
R.R. malleable	57.00-58.00
Rails, 2 ft and under	*60.00-61.00*
Rails, 18 in. and under	*61.00-62.00*
Angels, splice bars	57.00-58.00
Rails, rerolling	59.00-60.00

Stainless Steel Scrap

18-8 bundles & solids	*400.00-410.00*
18-8 turnings	*300.00-310.00*
430 bundles & solids	*95.00-100.00*
430 turnings	*55.00-60.00*

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*40.00-41.00*
No. 2 heavy melting	*30.00-31.00*
No. 1 bundles	*40.00-41.00*
No. 2 bundles	*29.00-30.00*
No. 1 busheling	*40.00-41.00*
Machine shop turnings	*26.00-27.00*
Mixed borings, turnings	*27.00-28.00*
Short shovel turnings	*27.00-28.00*
Punchings & plate scrape	*52.00-53.00*

Cast Iron Grades

No. 1 cupola	48.00
Charging box cast	43.00
Stove plate	45.00
Heavy breakable	41.00
Unstripped motor blocks	29.00
Clean auto cast	52.00
Malleable	53.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	45.50
No. 2 heavy melting	43.00
No. 1 bundles	45.50
No. 2 bundles	37.00
No. 1 busheling	45.50
Machine shop turnings	*32.50*
Short shovel turnings	36.50

Cast Iron Grades

No. 1 cupola	45.50
Charging box cast	40.00
Heavy breakable cast	40.00
Unstripped motor blocks	40.00
Brake shoes	45.00
Clean auto cast	*48.50*
Stove plate	*40.00*

Railroad Scrap

No. 1 R.R. heavy melt.	52.00
Rails, 18 in. and under	*63.00*
Rails, rerolling	*61.00*
Rails, random lengths	57.00
Angles, splice bars	*60.00*

PHILADELPHIA

No. 1 heavy melting	*52.00-54.00†*
No. 2 heavy melting	*44.00*
No. 1 bundles	*52.00-54.00†*
No. 2 bundles	*40.00-41.00*
No. 1 busheling	*52.00-54.00†*
Electric furnace bundles	57.00
Mixed borings, turnings	43.00
Short shovel turnings	45.00
Machine shop turnings	40.00-41.00
Heavy turnings	50.00
Structurals & plate	58.00-59.00
Couplers, springs, wheels	*63.00*
Rail crops, 2 ft & under	*71.00-72.00*

Caste Iron Grades

No. 1 cupola	*48.00-49.00*
Heavy breakable cast	*56.00*
Malleable	64.00†
Drop broken machinery	*55.00-56.00*

†Nominal.

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	*46.00-47.00*
No. 2 heavy melting	38.00-39.00
No. 1 bundles	*46.00-47.00*
No. 2 bundles	*35.00-36.00*
Machine shop turnings	*29.00-30.00*
Mixed borings, turnings	31.00-32.00
Short shovel turnings	34.00-35.00
Low phos. (structurals & plate)	*52.00-53.00*

Cast Iron Grades

No. 1 cupola	44.00-45.00
Unstripped motor blocks	34.00-35.00
Heavy breakable	46.00-47.00

Stainless Steel

18-8 sheets, clips solids	440.00-450.00
18-8 borings, turnings	330.00-340.00
430 sheets, clips, solids	95.00-100.00
410 sheets, clips, solids	85.00-90.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*44.00-44.50*
No. 2 heavy melting	*33.00-34.00*
No. 1 bundles	*44.00-44.50*
No. 2 bundles	*31.00-32.00*
No. 1 busheling	*44.00-44.50*
Machine shop turnings	*26.00-27.00*
Mixed borings, turnings	*28.00-29.00*
Short shovel turnings	*30.00-31.00*
No. 1 cast	*38.00-39.00*
Mixed cupola cast	*36.00-37.00*
No. 1 machinery cast	44.00-45.00

BUFFALO

No. 1 heavy melting	48.00-49.00
No. 2 heavy melting	42.00-43.00
No. 1 bundles	48.00-49.00
No. 2 bundles	39.00-40.00
No. 1 busheling	48.00-49.00
Mixed borings, turnings	34.00-35.00
Machine shop turnings	31.00-32.00
Short shovel turnings	35.00-36.00
Cast iron borings	34.00-35.00
Low phos.	51.00-52.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	*43.00-44.00*
No. 1 machinery	*47.00-48.00*

Railroad Scrap

Rails, random lengths	*57.00-58.00*
Rails, 3 ft and under	*62.00-63.00*
Railroad specialties	*52.00-53.00*

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*44.00-45.00*
No. 2 heavy melting	*37.50-38.50*
No. 1 bundles	*44.00-45.00*
No. 2 bundles	*33.50-34.50*
No. 1 busheling	*44.00-45.00*
Machine shop turnings	*31.00-32.00*
Mixed borings, turnings	31.00-32.00
Short shovel turnings	*33.50-34.50*
Cast iron borings	31.00-32.00
Low phos. 18 in.	*53.00-54.00*

Cast Iron Grades

No. 1 cupola	46.00-47.00
Heavy breakable cast	46.00-47.00
Charging box cast	46.00-47.00
Drop broken machinery	55.00-56.00

Railroad Scrap

No. 1 R.R. heavy melt.	48.00-49.00
Rails, 18 in. and under.	67.00-68.00
Rails, random lengths.	57.00-58.00

BIRMINGHAM

No. 1 heavy melting	42.00-43.00
No. 2 heavy melting	37.00-38.00
No. 1 bundles	42.00-43.00
No. 2 bundles	28.00-29.00
No. 1 busheling	42.00-43.00
Cast iron borings	26.00-27.00
Short shovel turnings	*35.00-36.00*
Machine shop turnings	*33.00-34.00*
Bar crops and plate	*51.00-52.00*
Structurals & plate	*50.00-51.00*
Electric furnace bundles	48.00-49.00
Electric furnace, 2 ft & under	*46.00-47.00*

(F.o.b. shipping point)

Cast Iron Grades

No. 1 cupola	*50.00-51.00*
Stove plate	50.00-51.00
Unstripped motor blocks	*39.00-40.00*
Charging box cast	*38.00-39.00*
No. 1 wheels	38.00-39.00

Railroad Scrap

No. 1 R.R. heavy melt.	48.00-49.00
Rails, 18-in. and under	*58.00-59.00*
Rails, rerolling	*61.00-62.00*
Rails, random lengths	*51.00-52.00*
Angles, splice bars	*56.00-57.00*

SEATTLE

No. 1 heavy melting	53.00
No. 2 heavy melting	48.00
No. 1 bundles	48.00
No. 2 bundles	30.00-32.00
Machine shop turnings	33.00-35.00
Mixed borings, turnings	33.00-35.00
Electric furnace No. 1	62.00-65.00

Cast Iron Grades

No. 1 cupola	52.00-54.00
Heavy breakable cast	48.00-50.00
Unstripped motor blocks	40.00-42.00
Stove plate (f.o.b. plant)	42.00-43.00

LOS ANGELES

No. 1 heavy melting	55.00
No. 2 heavy melting	51.00
No. 1 bundles	54.00
No. 2 bundles	36.00
Machine shop turnings	36.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	60.00

SAN FRANCISCO

No. 1 heavy melting	55.00
No. 2 heavy melting	50.00
No. 1 bundles	54.00
No. 2 bundles	38.00
Machine shop turnings	35.00
Mixed borings, turnings	35.00
Cast iron borings	35.00
Heavy turnings	35.00
Short shovel turnings	37.00
Cut structurals, 3 ft	63.00

Cast Iron Grades

No. 1 cupola	57.00
Charging box cast	47.00-49.00
Stove plate	48.00
Heavy breakable cast	42.00
Unstripped motor blocks	50.00
Clean auto cast	57.00
No. 1 wheels	50.00
Drop broken machinery	57.00

HAMILTON, ONT.

No. 1 heavy melting	48.00
No. 2 heavy melting	43.00
No. 1 bundles	48.00
No. 2 bundles	37.00
Mixed steel scrap	40.00
Mixed borings, turnings	24.00
Busheling, new factory: Prepared	46.00
Unprepared	42.00
Short steel turnings	33.00
Rails, rerolling	54.00

Cast Iron Grades†

No. 1 machinery cast	50.00

†F.o.b., Hamilton, Ont.

Leaders in Iron & Steel Scrap Since 1889
For over half a century our experience, personnel, equipment and key office locations have contributed to the steady growth of the iron and steel industry. Possibly our facilities may help you solve a problem in iron or steel scrap—no matter how big or small.
Luria Brothers and Company, Inc.
main office PHILADELPHIA NATIONAL BANK BUILDING, Phila. 7, Pa.
PLANTS
LEBANON, PENNA. DETROIT (COURSE), READING, PENNA. MICHIGAN MODENA, PENNA. PITTSBURGH, PENNA. ERIE, PENNA.
OFFICES
BIRMINGHAM, ALA. CLEVELAND, OHIO LOS ANGELES, CAL. READING, PENNA. BOSTON, MASS. DETROIT, MICHIGAN MEMPHIS, TENN. ST. LOUIS, MISSOURI BUFFALO, N. Y. HOUSTON, TEXAS NEW YORK, N. Y. SAN FRANCISCO, CAL. CHICAGO, ILLINOIS KOKOMO, INDIANA PITTSBURGH, PENNA. SEATTLE, WASH. CINCINNATI, OHIO LEBANON, PENNA. PUEBLO, COLORADO
In Canada MONTREAL, QUEBEC—HAMILTON, ONTARIO
IMPORT & EXPORT—LIVINGSTON & SOUTHARD, INC., 92 Park Ave., New York, N. Y. • Cable Address: FORENTRACO

Stockpiling: Trouble Ahead

Congress is interested in appeasing irate voters who want to see the $71.8-billion budget slashed. Appropriations for stockpiling critical metals may take a beating

Nonferrous Metal Prices, Pages 172 & 173

ARE GOVERNMENT purchases for the nonferrous stockpile being "phased out"?

There are growing indications that congressmen, alarmed by public reaction to the huge federal budget, are going to go all out to slash these appropriations.

Example—The House Appropriations Committee has recommended that only $19 million be spent for government stockpiling. The administration requested $130 million.

Lead, Zinc—By June, the General Services Administration will have little or no money left to buy these metals for its supplementary stockpile program. If the budget slashers win, the government may develop a new philosophy—the barter program (excess American grain for foreign origin lead and zinc) should be able to drain off the world oversupply, allowing U.S. producers to dispose of domestic production.

Copper—There is still money in the GSA coffers to purchase the red metal, but little may be taken unless the bottom falls out of the market. Some senators are requesting that basic information be given to indicate how much stockpiled metal is "really necessary to meet defense needs."

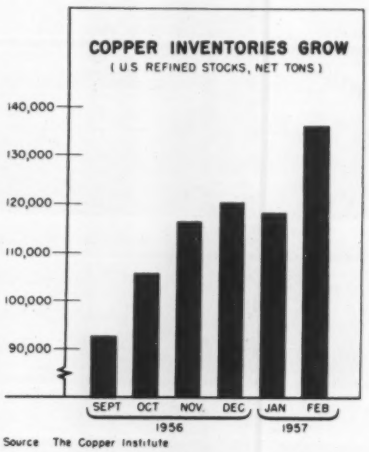
Reaction is mixed. Some nonferrous people feel it is imperative to have a government purchase program. Wails one: "We have boosted our capacity, based on the government's requests for expanded capacities. The civilian economy will not absorb all of it." The other side: "It's time we let the law of supply and demand determine the true price of our metals," says one sales manager.

Aluminum Sales: Weak

A spot check of industries using the light metal shows that autodom is not living up to its industry forecasts for the first and second quarters. Construction requirements are dipping, too. Total sales are holding at reasonable levels, but there is more than enough to go around.

Copper Skies Brighter

"We aren't having as much pressure put on us for price reductions since we went to the 32 cents a pound quotation," reports a primary producer. "Across the board sales are showing moderate improvement."



Source The Copper Institute

In February, deliveries of copper to fabricators (101,565 tons) took a nose dive from the January total of 119,925 tons, reports the Copper Institute. Refined production was 134,119 tons. Refined stocks jumped from 118,564 tons on the last day of January to 136,330 tons at the beginning of this month (see chart).

Spot Deliveries Grow

More sales of lead and zinc are on an immediate delivery basis. One primary lead producer reports it is growing more difficult to book orders ahead (May delivery). "With no worries about supply, tight money and mixed markets, customers are waiting until the last possible moment to order," he says.

Concern is growing over price cutting. Some producers admit they have lost a few old line customers because they would not shade prices.

Tin in Quandary

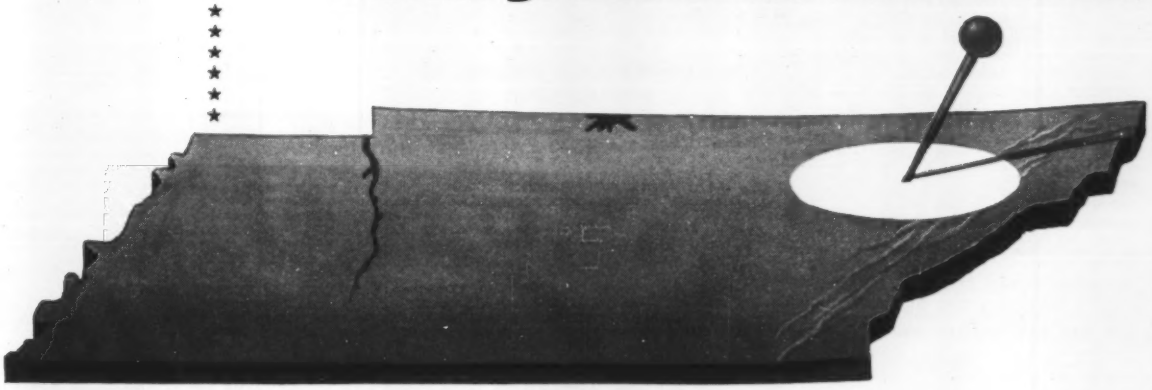
The International Tin Committee hopes to boost the price at which it can purchase metal for its buffer stock. The present price is 90 cents a pound. By buying tin for a buffer stock, the committee hopes to keep prices from falling below 90 cents a pound. Result: If it can purchase at a higher level, it will tend to keep tin quotations at unrealistic heights. American users are burning the wires at GSA. They are requesting that stockpiled tin be released to American users if the international tin group raises its floor price.

NONFERROUS PRICE RECORD

	Price Mar. 20	Last Change	Previous Price	Feb. Avg.	Jan. Avg.	Mar., 1956 Avg.
Aluminum ..	27.10	Aug. 10, 1956	25.90	27.100	27.100	24.650
Copper	31.00–32.00	Feb. 19, 1957	31.00–34.00	32.863	35.433	49.727
Lead	15.80	Jan. 13, 1956	16.30	15.800	15.800	15.800
Magnesium .	35.25	Aug. 13, 1956	33.75	35.250	35.250	32.500
Nickel	74.00	Dec. 6, 1956	64.50	74.000	70.880	64.500
Tin	100.00	Mar. 18, 1957	99.625	101.159	101.480	100.606
Zinc	13.50	Jan. 6, 1956	13.50	13.500	13.500	13.500

Quotations in cents per pound based on: COPPER, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary ingots, 99 + %, deld.; MAGNESIUM, pig, 99.8%, Velasco, Tex.

We've discovered
PART OF AMERICA'S FUTURE
underground in Tennessee



As the American economy has expanded, the use of zinc by industry has greatly accelerated, until today's per capita consumption of zinc shows a giant 24% increase over the per capita consumption only seven years ago.

But what about the future? With zinc's importance to Industry's ever-increasing demands, what about the supply?

In recent months, American Zinc has discovered a part of America's industrial future... underground in Tennessee. In the East Tennessee area, mining properties which adjoin American Zinc's long-established Mascot, Tenn., mining operations, exploration and development have confirmed zinc ore reserves underground which are equivalent to *more than 75 years' production at the current rate* of mines now operating in this area.

Tomorrow's zinc for automobile grills and trim... the galvanized coatings for steel... zinc for die-castings and brass... zinc pigments for paints and rubber... now lies underground in American Zinc's Tennessee development.

American Zinc, lead & smelting company

Columbus, Ohio · Chicago · St. Louis · New York · Detroit · Pittsburgh

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99+%, ingots 27.10; pigs, 25.00, 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 28.90; No. 43, 28.70; No. 195, 30.30; No. 241, 30.50; No. 356, 28.90, 30-lb ingots.

Antimony: R.M.M. brand, 99.5%, 33.00; Lone Star brand, 33.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 27.50-28.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.70 per lb deld.

Cobalt: 97-99%, $2.35 per lb for 550-lb keg; $2.37 per lb for 100-lb case; $2.42 per lb under 100 lb.

Columbium: Powder, $119.20 per lb, nom.

Copper: Electrolytic, 32.00 deld. Conn. valley; 32.00 deld. Midwest; custom smelters, 31.00 deld.; lake, 32.00 deld.; fire refined, 31.75 deld.

Germanium: First reduction, $201.85-$220 per lb; intrinsic grade, $220-$242.67 per lb, depending on quantity.

Gold: U.S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $100-$110 nom. per troy oz.

Lead: Common, 15.80; chemical, 15.90; corroding, 15.90, St. Louis. New York basis, add 0.20.

Lithium: 98+%, cups or ingots, $11.50; rod, $13.50; shot or wire, $14.50, f.o.b. Minneapolis, 100 lb lots.

Magnesium: Pig, 35.25; ingot, 36.00, f.o.b. Velasco, Tex. 13 in. sticks, 59.00, f.o.b. Madison, Ill.

Magnesium Alloys: AZ91B (diecasting), 37.25 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $255-$257 per 76-lb flask.

Molybdenum: Extruded ingot, $9.60 per pound, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot or ingots for addition to cast iron, 74.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01.

Osmium: $80-$100 per troy oz, nom.

Palladium: $23-$24 per troy oz.

Platinum: $92-$95 per troy oz from refineries.

Radium: $16-$21.50 per mg radium content, depending on quantity.

Rhodium: $118-$125 per troy oz.

Ruthenium: $45-$55 per troy oz.

Selenium: 99.5%, $12-$15 per lb.

Silver: Open market, 91.375 per troy oz.

Sodium: 16.50, c.l.; 17.00, l.c.l.

Tantalum: Sheet, rod, $68.70 per lb; powder, $56.63 per lb.

Tellurium: $1.65 per lb.

Thallium: $12.50 per lb.

Tin: Straits, N. Y., spot, 100.00; prompt, 99.75.

Titanium: Sponge, 99.3+%, grade A-1 ductile (0.3% Fe max.), $2.75; grade A-2 (0.5% Fe max.), $2.50 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, $4.00 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99+% hydrogen reduced, $4.75.

Zinc: Prime Western, 13.50; brass special, 13.75; intermediate, 14.00, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 14.85; special high grade, 15.25 deld. Die casting alloy ingot No. 3, 17.50; No. 2, 18.50; No. 5, 18.00 deld.

Zirconium: Ingots, commerical grade, $14.40 per lb; low-hafnium reactor grade, $23.07. Sponge, commerical grade, $10 per lb; reactor grade, $14-$22 per lb depending on quantity. Powder electronics grades, $15 per lb; flash grade, $11.50.

(Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 22.50-29.25; No. 12 foundry alloy (No. 2 grade), 22.50-23.50; 5% silicon alloy, 0.60 Cu max., 24.75-26.00; 13 alloy, 0.60 Cu max., 24.75-26.00; 195 alloy, 24.50-26.75; 108 alloy, 22.50-23.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.75; grade 2, 22.00; grade 3, 21.00; grade 4, 20.25.

Brass Ingot: Red brass, No. 115, 31.50; tin bronze, No. 225, 40.50; No. 245, 35.50; high-leaded tin bronze, No. 305, 35.50; No. 1 yellow, No. 405, 25.25; manganese bronze, No. 421, 28.50.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 37.50; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2009 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.83-$1.86, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.80, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 30,000-lb lots, 37.355; l.c.l., 37.98. Weatherproof, 30,000-lb lots, 37.78; l.c.l., 38.53. Magnet wire deld., 15,000 lb or more, 44.68; l.c.l., 45.43.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $21.50 per cwt; pipe, full coils, $21.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $11.00-$14.75; sheared mill plate, $9.25-$11.25; wire, $8.50-$11.00; forging billets, $6.85-$7.10; hot-rolled and forged bars, $7.10-$7.35.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 24.00; ribbon zinc in coils, 21.50; plates, 20.00.

ZIRCONIUM

Plate, $20.35; H.R. strip, $23.95; C.R. strip, $32.00; forged or H.R. bars, $18.40; wire, 0.015 in., 8.00c per linear foot.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strip, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheet and Circles: 1100 and 3003 mill finish (30,000 lb base; freight allowed).

Thickness Range, Inches	Flat Sheet	Coiled Sheet
0.249-0.138	40.90-45.40	....
0.135-0.096	41.40-46.50	37.70-39.60
0.095-0.077	42.10-48.30	37.80-39.80
0.076-0.061	42.70-50.60	38.20-40.50
0.060-0.048	43.40-52.90	38.80-41.50
0.047-0.038	43.90-55.60	38.60-42.90
0.037-0.030	44.30-50.00	40.40-44.70
0.029-0.024	44.90-52.40	41.00
0.023-0.019	45.80-52.20	42.00
0.018-0.017	46.60-53.30	42.60
0.016-0.015	47.50-53.90	43.40
0.014	48.50-50.90	44.40
0.013-0.012	49.70-52.10	45.10
0.011	50.70-53.70	46.30
0.010-0.0095	52.10-54.40	47.60
0.009-0.0085	53.40	49.10
0.008-0.0075	55.00	50.03
0.007	56.50	51.80
0.006	58.10	53.20

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	40.2	44.5
5050-F	41.3	45.6
3004-F	42.3	47.5
5052-F	42.9	48.2
6061-T6	44.4	50.0
2024-T4*	48.1	54.4
7075-T6*	55.4	62.5

*24-48 in. widths or diam., 72-180 lengths.

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
Drawn				
0.125	74.30	71.50	....	....
0.156-0.172	63.00	60.40	....	....
0.188	63.00	60.40	....	76.40
0.219-0.234	59.70	57.20	....	....
0.250-0.281	59.70	57.20	....	73.00
0.313	59.70	57.20	....	69.60
0.344	58.50	....	....	....
Cold-Finished				
0.375-0.547	58.80	57.50	70.10	65.50
0.563-0.688	58.80	57.50	66.70	61.60
0.750-1.000	57.40	56.00	61.00	58.10
1.063	57.40	56.00	....	56.10
1.125-1.500	55.20	53.90	59.00	56.10
Rolled				
1.563	53.70	52.40	....	....
1.625-2.000	53.10	51.60	....	....
2.125-2.500	51.70	50.30	....	....
2.563-3.375	50.20	48.70	....	....

Forging Stock: Round, Class 1, 43.30-55.90 in specific lengths 36-144 in., diam. 0.375-8 in. Rectangles and squares, Class 1, 48.10-63.20 in random lengths, 0.375-4 in. thick, width 0.0750-10 in.

Pipe: ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000-lb base, per 100 ft.

Nom. Pipe Size (in.)		Nom. Pipe Size in.)	
¾	$18.45	2	$ 57.00
1	29.00	4	157.20
1¼	39.25	6	281.65
1½	46.95	8	423.80

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	43.10-44.60	57.80-61.80
12-14	43.40-44.80	58.40-62.70
15-17	43.60-45.40	59.60-64.30
18-20	44.10-45.80	61.50-66.80

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grade, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.0 in., 93.30. Thread plate, .188 in., 71.70; .250-2.0 in., 70.60. Tooling plate, .250-3.0 in., 73.0.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)

Aluminum: 1100 clippings, 13.00-13.50; old sheets, 8.00-8.50; borings and turnings, 6.00-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnings
Copper	54.13b	51.36c	....	54.32	28.000	28.000	27.250
Yellow Brass	47.52	37.69d	48.06	50.43	21.875	21.625	20.125
Low Brass, 80%	50.20	50.14	50.74	53.01	24.250	24.000	23.500
Red Brass, 85%	51.14	51.08	51.08	53.95	25.000	24.750	24.250
Com. Bronze, 90%	52.63	52.57	53.17	55.19	25.875	25.625	25.125
Manganese Bronze	55.43	49.53	59.77	....	20.500	20.250	19.750
Muntz Metal	49.79	45.60	....	....	20.750	20.500	20.000
Naval Brass	51.69	46.00	58.75	55.10	20.500	20.250	19.750
Silicon Bronze	58.60	57.79	58.64	60.68e	27.375	27.125	26.375
Nickel Silver, 10%	64.06	66.39g	66.39	....	28.250	28.000	14.125
Phos. Bronze, A-5%	73.17	73.67	73.67	74.85	28.875	28.625	27.625

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Leaded

6.50; crankcases, 8.00-8.50; industrial castings, 8.00-8.50.

Copper and Brass: No. 1 heavy copper and wire, 23.50-24.00; No. 2 heavy copper and wire, 22.00-22.50; light copper, 19.50-20.00; No. 1 composition red brass, 20.00-20.50; No. 1 composition turnings, 19.00-19.50; yellow brass turnings, 12.00-12.25; new brass clippings, 18.50-19.00; light brass, 12.00-12.50; heavy yellow brass, 14.00-14.50; new brass rod ends, 16.50-17.00; auto radiators, unsweated, 15.00-15.50; cocks and faucets, 16.00-16.50; brass pipe, 16.50-17.50.

Lead: Heavy, 12.00-12.50; battery plates, 6.25-6.75; linotype and stereotype, 13.00-14.00; electrotype, 12.50-13.00; mixed babbitt, 12.00-13.50.

Monel: Clippings, 70.00-80.00; old sheets, 65.00-75.00; turnings, 55.00-68.00; rods, 70.00-80.00.

Nickel: Sheets and clips, 140.00-175.00; rolled anodes, 140.00-175.00; turnings, 125.00-150.00; rod ends, 140.00-175.00.

Zinc: Old zinc, 5.00-6.00; new die-cast scrap, 3.75-6.50; old die-cast scrap, 2.25-5.00.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 1100 clippings, 17.50-18.00; 3003 clippings, 17.50-18.00; 6151 clippings, 17.50-18.00; 5052 clippings, 17.50; 2014 clippings, 16.50-17.50; 2017 clippings, 16.50-17.50; 2024 clippings, 16.50-17.50; mixed clippings, 16.50-17.00; old sheets, 14.50-15.00; old cast, 14.50-15.00; clean old cable (free of steel), 17.00-17.50; borings and turnings, 15.00-16.00.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 54.00; light scrap, 49.00; turnings and borings, 34.00.

Copper and Brass: No. 1 heavy copper and wire, 27.00; No. 2 heavy copper and wire, 25.00; light copper, 22.75; refinery brass (60% copper) per dry copper content, 24.50.

INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper and Brass: No. 1 heavy copper and wire, 27.00; No. 2 heavy copper and wire, 25.00; light copper, 22.75; No. 1 composition borings, 22.50; No. 1 composition solids, 23.00; heavy yellow brass solids, 17.00; yellow brass turnings, 16.00; radiators, 17.50.

PLATING MATERIAL

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.70 per lb.

Copper: Flat-rolled, 50.29; oval, 49.42, 5000-10,000 lb; electrodeposited, 39.25, 2000-5000 lb lots; cast, 44.00, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, $1.015; 100-499 lb, 99.50; 500-4999 lb, 95.50; 5000-29,999 lb, 93.50; 30,000 lb, 91.50. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab; less than 200 lb, 118.50; 200-499 lb, 117.00; 500-999 lb, 116.50; 1000 lb or more, 116.00.

Zinc: Balls, 21.00; flat tops, 21.00; flats, 22.75; ovals, 22.00, ton lots.

CHEMICALS

Cadmium Oxide: $1.70 per lb, in 100-lb drums.

Chromic Acid: 100 lb, 33.20; 500 lb, 32.70; 2000 lb, 32.05; 5000 lb, 31.75; 10,000 lb, 31.25, f.o.b. Detroit.

Copper Cyanide: 100-1000 lb, 77.50.

Copper Sulphate: 100 lb, 26.65; 200 lb, 23.65; 300 lb, 22.65; 400 lb, 22.15; 500 lb, 20.65; 2000 lb, 18.40; 6000 lb, 18.15; 12,000 lb, 17.90, f.o.b. shipping point.

Nickel Chloride: 100 lb, 48.50; 200 lb, 46.50; 300 lb, 45.50; 400 lb, 43.50; 5000 lb, 41.50; 10,000 lb, 40.50.

Nickel Sulphate: 100 lb, 40.50; 200 lb, 38.50; 300 lb, 37.50; 400 lb, 35.50; 5000 lb, 33.50; 20,000 lb, 33.00; 36,000 lb, 32.50.

Sodium Cyanide: 100 lb, 27.50; 200 lb, 25.80; 400 lb, 22.80; 1000 lb, 21.80, f.o.b. Detroit.

Sodium Stannate: Less than 100 lb, 78.50; 100-600 lb, 69.20; 700-1900 lb, 66.40; 2000-9900 lb, 64.60; 10,000 lb or more, 63.30.

Stannous Chloride (anhydrous): Less than 25 lb, 168.30; 25 lb, 133.30; 100 lb, 118.30; 400 lb, 115.90; 5200-19,600 lb, 103.70; 20,000 lb or more, 91.50.

Stannous Sulphate: Less than 50 lb, 131.00; 50 lb, 101.00; 100-1900 lb, 99.00; 2000 lb or more, 97.00.

Zinc Cyanide: Under 1000 lb, 55.55; 1000 lb and over, 53.55.

(*Concluded from page* 167)

current market strength. Several of the larger buyers are expected to continue this practice for at least a month.

Youngstown—The scrap market here is dull. Some observers look for a further decline in prices. Last sales of No. 2 heavy melting were at $46, and No. 2 bundles at $42. One mill recently bought No. 1 industrial heavy melting at $52.75.

There are no large accumulations in dealers' yards. Material is moving out of the yards almost as fast as it is received.

San Francisco—Steel mill operations continue at high level in this area, and scrap prices remain firm. Cast iron grades have stabilized after the recent moderate downward adjustment.

St. Louis—General price weakness continues in the scrap market, particularly in railroad items. Two large pending offerings are expected to depress prices farther. With mill stockpiles substantial, new buying is slow. Shipments to dealers' yards from rural areas

STEEL

IMMEDIATE DELIVERY

PRIME NEW

Angles	¾" x ¾" x ⅛" to 8" x 8" x 1⅛"
I-Beams	3" to 24"
W.F. Beams	4" to 36"
Channels	3" to 18"
Reinforcing Rods	⅜" to 1¼"
Reinforcing Wire Mesh	10 Gauge to 5 Gauge
Plates	3/16" to 3"
H.R. Sheets	16 Gauge to 7 Gauge
Galvanized Sheets	30 Gauge to 16 Gauge
Corrugated Galvanized Sheets	28 Gauge & 24 Gauge

Bars—Flats—Rounds—Squares

WE INVITE YOUR STEEL INQUIRIES

CALUMET IRON & SUPPLY CO.

175 West Chicago Ave. East Chicago, Ind.
Phone — Chicago RE 4-6020 East Chicago 1868

WANTED TO BUY
ELECTRIC MELTING FURNACE
2000 TO 3000 LB. IRON CAPACITY DIRECT ARC. WITH TRANSFORMERS AND CONTROL EQUIPMENT
Reply to Box 533, STEEL
Penton Bldg. Cleveland 13, Ohio

TOP-NOTCH STAINLESS STRIP MAN

Well established steel producer needs experienced sales engineer in stainless strip sales. Opportunity to start on ground floor in an expanding company. Must be willing to travel and be able to sell. Basic knowledge of stainless strip production methods and problems is required. Progressive management and has all fringe benefits. Replies will be held in confidence. Send complete resume and salary requirements.
Box 523, STEEL
Penton Bldg. Cleveland 13, Ohio

CLASSIFIED

Help Wanted

WANTED: METALLURGIST FOR NEW ENGLAND foundry producing carbon low alloy and stainless steel castings. Should be metallurgical graduate with technical ability direct laboratory and melting furnaces. Submit resume giving experience, education, age, and salary expected. Reply Box 528, STEEL, Penton Bldg., Cleveland 13, Ohio.

WE HAVE AN OPENING IN OUR ORGANIZATION for a Chief Engineer. He will be required to do some detail work on structural steel, steel stairs, fire escapes and other miscellaneous items together with his supervisory work. At present, we have four (4) draftsmen who would be under him. For further information, write Ornamental Metalworks Company, P.O. Box 989, Decatur, Illinois, stating qualifications and experience.

Positions Wanted

PLANT SUPT. WIDE EXPERIENCE IN Supervising and Production and Jobbing both Structural and Machine also Fixture, Tool and Gauge Design. Write Box 531, STEEL, Penton Bldg., Cleveland 13, Ohio.

OPPORTUNITY

COLD STRIP MILL

An opportunity for an experienced Cold Strip Mill Administrator. Must have extensive operating or maintenance background. Supervisory experience necessary.

Position covers complete modern strip mill producing and finishing the highest quality steels and related metals. Pittsburgh district.

Interviews will be given only to qualified persons. Our supervisors know this opening exists. In reply, please provide personal data, work history and educational background. All replies held in confidence. Salary open. Write Box 532, STEEL, Penton Bldg., Cleveland 13, Ohio.

FOR CLASSIFIED RATES
And Further information write
STEEL., Penton Bldg., Cleveland 13, O.

AIR IN MOTION
KEEPS MEN IN MOTION

Dusty or fume-laden air can curtail production and increase maintenance costs by dulling worker efficiency and damaging bearings, motors . . . even machines.

Efficient K & B Dust Control Systems put AIR in Motion to become an important production tool.

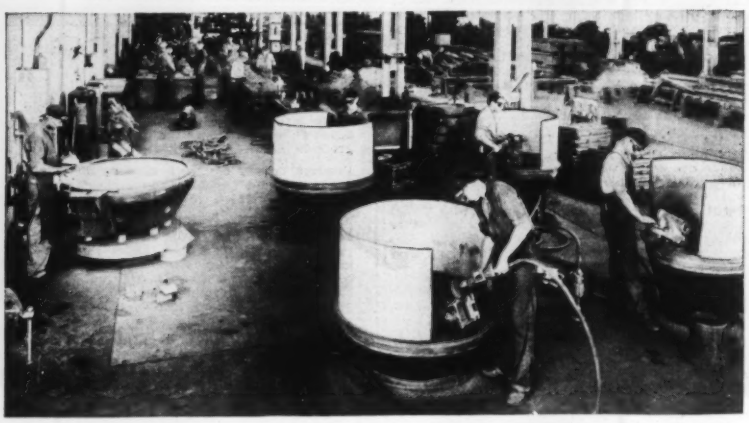
In the plant of a noted chain and forging firm, an official made this comment about a new K & B installation: "Our workmen can now work full time . . . this means added production for them and for the company as well."

Call on K & B engineers to put *AIR in Motion* and help boost your plant efficiency. The Kirk & Blum Manufacturing Company, 3226 Forrer Street, Cincinnati 9, Ohio

K & B system serving castings grinding removes dust, sand and chips as fast as they are produced. Work revolves on turntable to enable operator to work continuously.

50 YEARS OF SERVICE
KIRK & BLUM
DUST CONTROL

K & B Down Draft Dust Control System in plant of The Monarch Machine Tool Co., Sidney, Ohio



are declining.

Seattle—The scrap market continues firm and active. Turnover is heavy as domestic and export demands are well maintained. Receipts are also in good volume, current prices being attractive to shippers at interior points.

Buffalo—Cast iron scrap prices dropped $3 a ton here last week. There is a soft undertone in the mill grades as well. Cupola cast is quoted at $44, off $3, and No. 1 machinery cast is down similarly to $48. Scrap rails and railroad specialties were marked down about $2 a ton.

Supplies in dealers' yards are light. The influx of material is reported slow.

Washington — Consumption of ferrous materials (scrap and pig iron) totaled 6,626,000 gross tons of scrap and 6,482,000 tons of pig iron in January, reports the Bureau of Mines. Compared with December figures, scrap was up 6 per cent, pig iron 1 per cent.

The total melt (13,108,000 tons) consisted of 50.5 per cent scrap and 49.5 per cent pig iron. The percentages were reversed in December.

Domestic stocks of ferrous scrap held by consumers at the end of January totaled 6,530,000 tons. Stocks of pig iron were 2,023,000 tons. Comparison with December: Scrap was off 1 per cent, pig iron 4 per cent.

Scrap available for consumption in January (home production plus purchases) amounted to 6,539,000 tons, a decrease of 2 per cent from the December total. Home scrap accounted for 3,632,000 tons and purchases, 2,907,000. Of the purchases, 85 per cent were received from dealers, 15 per cent from other sources.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 157

Concrete reinforcing bar demand for buildings, garages, schools and commercial structures is heavy in New England. Buying for bridges and highways is temporarily off.

Three office buildings, two in Boston and one in Providence, R. I., will be of reinforced concrete construction, requiring approximately 2000 tons.

Advertising Index

Ajax Flexible Coupling Co., Inc. 165
Alco Products, Inc. 33
Allegheny Ludlum Steel Corporation 176
Allen Manufacturing Co. 29
Allis-Chalmers, Power Equipment Division 46, 47
Aluminium Limited Sales, Inc. 120
American Brass Co. 138
American Chain & Cable 48
American Smelting & Refining Co., Federated Metals Division 148, 149
American Steel & Wire Division, United States Steel Corporation 43
American Zinc, Lead & Smelting Co. 171
Armstrong-Blum Mfg. Co. 53
Atlantic Refining Co. 9
Atlas Mineral Products Co. 12
Avondale Marine Ways, Inc. 8

Babcock & Wilcox Co., The, Refractories Division 91
Barry Controls, Inc. 121
Behr-Manning Co., A Division of Norton Co. 39
Bethlehem Steel Co. 1
Bigelow-Liptak Corporation 136
Birdsboro Steel Foundry & Machine Co. 38
Bliss, E. W., Co., Mackintosh-Hemphill Division 17

Calumet Iron & Supply Co. 173
Carpenter Steel Co., The, Alloy Tube Division 152
Chicago Rawhide Manufacturing Co., Sirvis Division 65
Cincinnati Cleaning & Finishing Machinery Co. 175
Cincinnati Milling Machine Co., The, Process Machinery Division 66
Colorado Fuel & Iron Corporation, The 36, 166
Columbia-Geneva Steel Division, United States Steel Corporation 43
Cowles Tool Co. 154
Crucible Steel Company of America 24

Dempster Brothers 49
Dow Chemical Co., The 119
Drop Forging Association 93

Eaton Manufacturing Co., Reliance Division 146
Eidal Mfg. Co. 167
Erie Bolt & Nut Co. 150

Fairbanks, Morse & Co. 92
Federal Tool & Manufacturing Co. 154
Federated Metals Division, American Smelting & Refining Co. 148, 149
Foote Bros. Gear & Machine Corporation 135

General Electric Co. 130, 131
Gleason Works 78
Goodrich, B. F., Industrial Products Co. 7
Gould-National Batteries, Inc. 4
Great Lakes Steel Corporation 94, 95

Heald Machine Co., The ..... Inside Front Cover
Hevi-Duty Electric Co. 96
Hill Acme Co., The, Cleveland Knife Division 165
Homestead Valve Manufacturing Co., Hypressure Jenny Division 137
Hydraulic Press Mfg. Co., The 111

Inland Steel Co. 56
International Nickel Co., Inc., The 54
International Packings Corporation 45

Jessop Steel Co. 97
Jones & Laughlin Steel Corporation 81

Kaiser Aluminum & Chemical Sales, Inc., Kaiser Chemicals Division 140, 141
Kearney & Trecker Corporation 84, 85
Keystone Steel & Wire Co. 143
Kidde, Walter, & Co., Inc. 10
Kirk & Blum Mfg. Co., The 174

Lake Erie Engineering Corporation 18, 19
La Salle Steel Co. 70
Lectromelt Furnace Division, McGraw-Edison Co. 32
Lenco, Inc. 167
Levinson Steel Co., The 115
Lindberg Industrial Corporation 116
Link-Belt Co. 21
Loftus Engineering Corporation 151
Luria Brothers & Co., Inc. 169

McGraw-Edison Co., Lectromelt Furnace Division 32
Mackintosh-Hemphill Division of E. W. Bliss Co. 17
Mahon, R. C., Co., The 22
Master Electric Co., The 13
Mattison Machine Works 25, 26, 27, 28
Mesta Machine Co. 109
Milford Rivet & Machine Co., The 88
Moltrup Steel Products Co. 165
Morgan Engineering Co., The 112, 113

National Automatic Tool Co., Inc. 14, 15
National Steel Corporation 94, 95
National Tube Division, United States Steel Corporation 43
Norton Co., Behr-Manning Co. Division 39
Norton Co., Machine Division 34, 35

Ornamental Metalworks Co. 173
Osborn Manufacturing Co., The 3

Pangborn Corporation 11
Pioneer Engineering & Manufacturing Co., Inc. 23
Pittsburgh Steel Co. 30, 31
Pope Machinery Corporation 139
Pratt & Whitney Co., Inc. 128, 129
Progressive Mfg. Co., The, Division of The Torrington Co. 144

Ransburg Electro-Coating Corporation 126
Reading Crane & Hoist Corporation 16
Reliance Division, Eaton Manufacturing Co. 146
Republic Steel Corporation 86, 87
Roebling's, John A., Sons Corporation, A Subsidiary of The Colorado Fuel & Iron Corporation 36
Russell, Burdsall & Ward Bolt & Nut Co. 74
Ryerson, Joseph T., & Son, Inc. 50

Sandusky Foundry & Machine Co. 89
Sewall, E. B., Manufacturing Co. 44
Simonds Abrasive Co. 40, 41
Somers Brass Co. 77
Standard Conveyor Co. 90
Standard Oil Co. (Indiana) 37
Stevens, Frederic B., Inc. 142
Surface Combustion Corporation 107

Teiner, Roland, Co., Inc. 76
Tennessee Coal & Iron Division, United States Steel Corporation 43
Timken Roller Bearing Co., The ..... Back Cover
Torrington Co., The, The Progressive Mfg. Co. Division 144
Tube Methods, Inc. 6
Twin Disc Clutch Co. 42

United Engineering & Foundry Co. 133
United States Rubber Co., Mechanical Goods Division 73
United States Steel Corporation, Subsidiaries 43
United States Steel Export Co. 43
United States Steel Supply Division, United States Steel Corporation 43

Vanadium Corporation of America 134
Verson Allsteel Press Co. 122, 123

Wagner Brothers, Inc. 2
Ward Steel Co. 16
Wean Equipment Corporation 83
Wickwire Spencer Steel Division of The Colorado Fuel & Iron Corporation 166
Wilson, Lee, Engineering Co., Inc. ..... Inside Back Cover
Wyman-Gordon Co. 98

Yoder Co., The 20

~ ~ ~

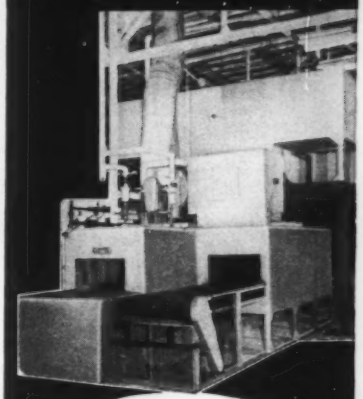
Table of Contents, Page 5

Classified Advertising, Page 173

NEEDS:

new design for crucial

metal cleaning and treating



SELECTION:

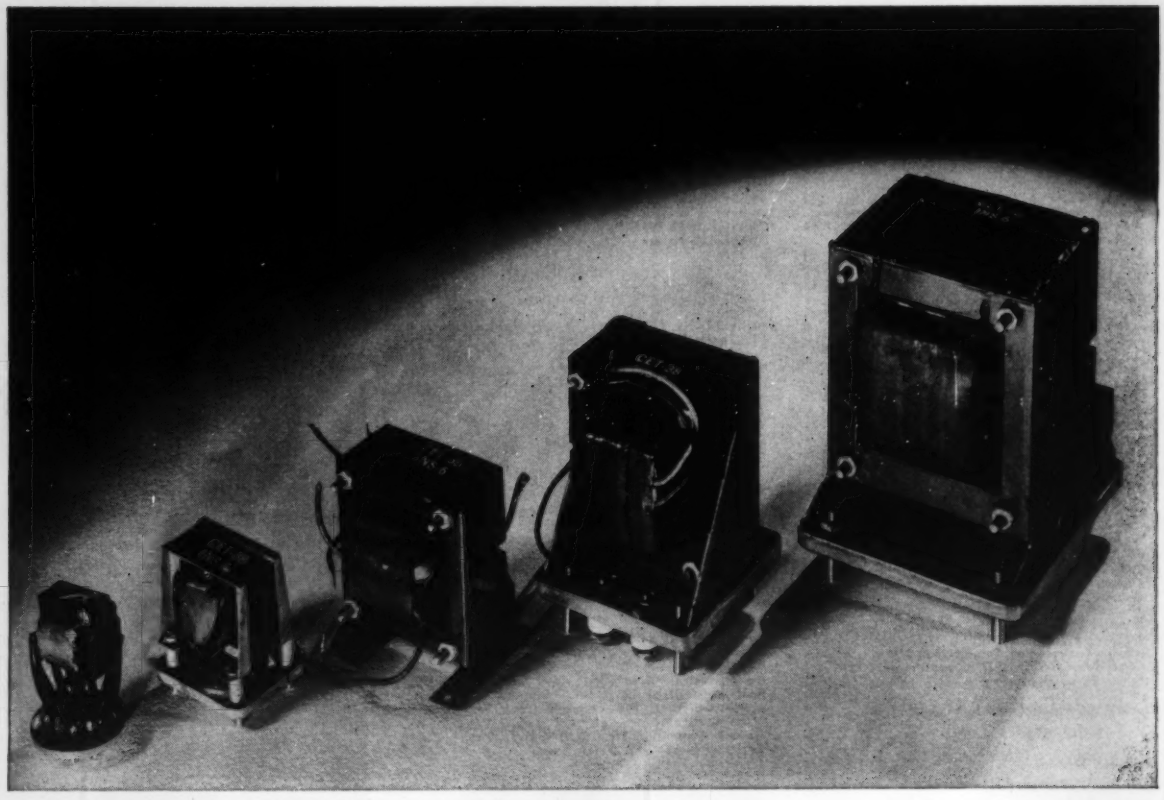
Cincinnati

You can't afford to take chances on over 2,345 sq. ft. of metal cleaning equipment. That's why Briggs & Stratton Corp., the world's largest manufacturer of 4-cycle, single cylinder, gasoline engines insisted on CINCINNATI. Ingenious use of suspended, platform-mounted and U-shaped units with transfer conveyors fits all 4 machines into just 765 sq. ft., reduces manpower and maintenance.

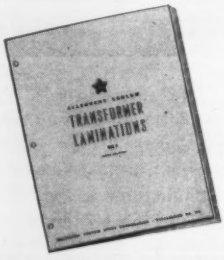
You can rely on CINCINNATI experts. Write today for details.

Cincinnati

CLEANING and FINISHING MACHINERY COMPANY
2019 Hageman St., Cinti. 41, Ohio



A Transformer becomes a precision device with Allegheny Magnetic Materials in the core



Write for your Copy

"TRANSFORMER LAMINATIONS"

84 pages of valuable technical data on standard and custom-made laminations from all grades of Allegheny Ludlum magnetic core materials. Prepared from carefully checked and certified laboratory and service tests —includes standard dimensions, specifications, weights, etc. Sent free on request . . . ask for your copy.

ADDRESS DEPT. S-871

★ **ALLEGHENY SILICON STEEL**

★ **ALLEGHENY 4750**

★ **ALLEGHENY MUMETAL**

The operation of a transformer is no better than the magnetic core around which it is built. With Allegheny magnetic materials in the core, you get the *best*—uniformly and consistently.

Sure there are reasons why! For one thing, there's the long experience of a pioneer in development and quality control of electrical alloys. But most important, the A-L line offers complete coverage of any requirement you may have, any service specification. It includes all grades of silicon steel sheets or coil strip, as well as Allegheny Silectron (grain-oriented silicon steel), and a wide selection of special high-permeability alloys such as Allegheny 4750, Mumetal, etc.

In addition, our service on magnetic materials includes complete lamination fabrication and heat treatment facilities. What's more, this extensive experience in our own lamination stamping department is a bonus value for all users of A-L electrical sheets or strip. ● Let us supply *your* needs. ***Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa.***

STEELMAKERS to the Electrical Industry

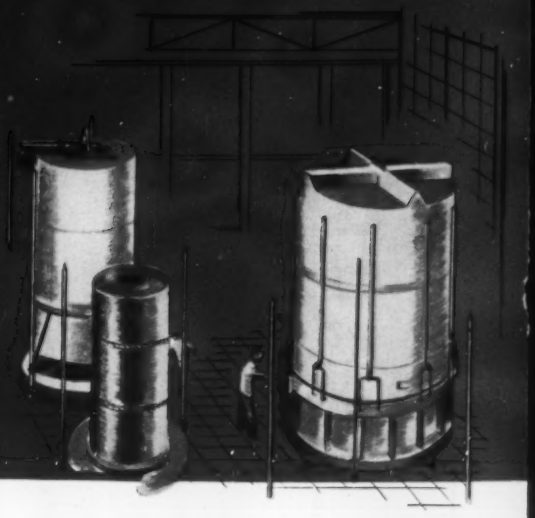
Allegheny Ludlum

WAD 5333

®
AL
STEELS FOR THE ELECTRONIC AGE

EIGHTH OF A SERIES

Customer's Report



"Quality beyond expectation, operating conditions best ever since we switched to remote control Lee Wilson Furnaces"

• "Only Lee Wilson Single Stacks offered up-to-date operating conditions — and, this was another reason we switched to these furnaces when we expanded our annealing facilities," a cold mill superintendent for a leading strip producer told us recently. This statement is, indeed, fact — for *only* Lee Wilson Single Stacks enable operators to thoroughly and exactly control furnace temperatures from modern remote control centers. This results in faster, more uniform annealing, and makes the operators job cleaner, easier and safer.

This is just one of many reasons why Lee Wilson Single Stack is preferred over all others in modern annealing practice.

Only Lee Wilson Furnaces Give You All These Advantages

1. GREATER FLEXIBILITY
2. MORE UNIFORM HEAT APPLICATION
3. IMPROVED CUSTOMER SERVICE
4. HIGHER PRODUCTION
5. BETTER LOAD FACTOR
6. MINIMUM PROCESS INVENTORY
7. REDUCED LABOR COST
8. BETTER OPERATING CONDITIONS
9. LOWER MAINTENANCE COST
10. REDUCED INSTALLATION COSTS

Lee Wilson® ENGINEERING COMPANY, INC.

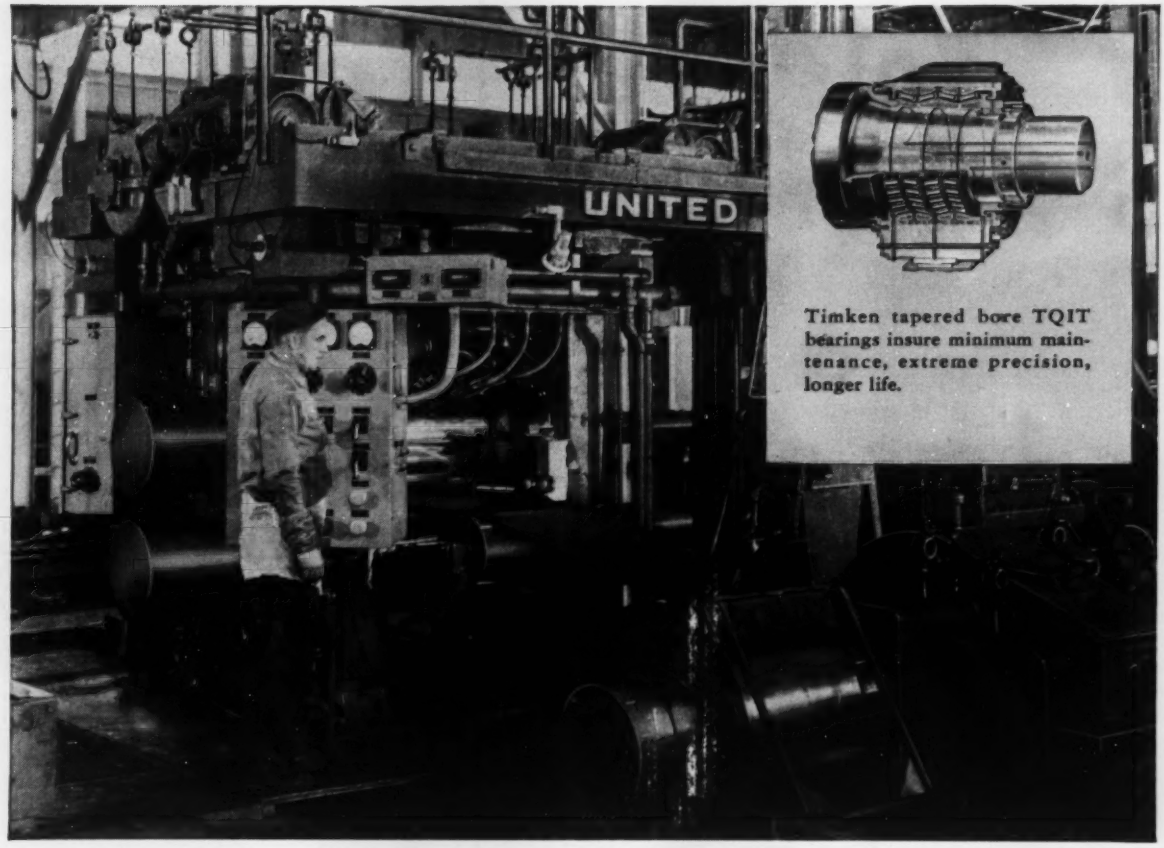
20005 WEST LAKE ROAD • CLEVELAND 16, OHIO

SINGLE-STACK RADIANT TUBE ANNEALING FURNACES

MAKE THE BEST METALS BETTER

252

* ORIGINATORS AND LEADING PRODUCERS OF SINGLE-STACK RADIANT TUBE FURNACES



Timken tapered bore TQIT bearings insure minimum maintenance, extreme precision, longer life.

2-high temper pass mill starts faster, runs smoother on TIMKEN® TQIT bearings

THIS 2-high temper pass mill, built by United Engineering and Foundry for Alan Wood Steel Company, uses tapered roller bearings of the TQIT type, designed and developed by The Timken Roller Bearing Company.

Higher mill speeds are possible with Timken® bearings. They reduce starting resistance. That's because Timken bearings practically eliminate friction. Their geometric design gives them true rolling motion. Precision manufacture makes them live up to their design. All this makes for smoother, more dependable operation.

Timken tapered bore bearings combine interference fit with easy removal. They can be removed from the roll neck by expanding the cones hydraulically. Excessive scuffing and neck wear are eliminated. Greater stability between cones and roll neck distributes the load within the bearing. Improved fillets and larger necks are possible. This means you get the lowest possible neck stress and deflection.

Lubricant costs are cut because Timken bearings use economical grease lubrication. No lubricant is lost during roll changes. And rolls can be changed faster because there are no tubes or pipes. The tapered design of Timken bearings lets them take radial and thrust loads in any combination—no need for special thrust bearings that increase costs and complicate designs.

Be sure you get all the advantages of Timken TQIT bearings in the machines you buy or build. For more information call or write The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

TIMKEN TAPERED ROLLER BEARINGS ROLL THE LOAD

TRADE-MARK REG. U. S. PAT. OFF.